

Temporary Facilities and Controls & Environmental Pollution Control Plan



JORGENSEN FORGE EARLY ACTION AREA

Jorgensen Forge Corporation Property
Seattle, WA

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Jorgensen Forge Early Action Area
Removal Action Work Plan

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1.0 Purpose & Objective

The purpose of the Temporary Facilities and Controls & Environmental Pollution Control Plan is to detail the management of environmental conditions present over the course of the project and methods to ensure proper management of these conditions. Included as attachments to the Temporary Facilities and Controls & Environmental Pollution Control Plan are:

- The Stormwater Pollution Prevention Plan (SWPPP) which addresses stormwater runoff and in-water sediment turbidity controls (Attachment A).
- Spill Prevention, Control, and Countermeasures Plan (SPCC) related to upland and on-water operations (Attachment B).
- Hazardous Materials Management Plan which address the management of all onsite waste streams (Attachment C)

The objectives of the Temporary Facilities and Controls & Environmental Pollution Control Plan include providing the proposed plan for:

- The management structure for control of environmental conditions at the site during the course of the project
- Means and methods for implementing environmental controls during demolition, dredging, shoreline bank excavation, loading and transport of impacted materials and demolition debris, backfill, and restoration activities
- Site Maintenance and Housekeeping
- Site Security
- Air Pollution Controls
- Noise Management
- Protection of Groundwater

2.0 Management of Environmental Conditions

Pacific Pile & Marine (PPM) employs a management team on all construction projects to perform a variety of roles. One of the most important roles is the protection of the environment during the course of construction activities. As part of the initial site training during mobilization, all site workers are trained on the methods for performing all work activities in a manner to minimize impacts to the environment and reporting procedures when environmental impacts do occur.

The primary responsibility to monitor and manage environmental conditions on site is shared between PPM's Site Health and Safety Officer (H&S Officer) and PPM's Site Supervisor. The Site Supervisor or H&S Officer will immediately report any impacts to the environment to the Project Manager who will in turn report the conditions to EMJ's and JFC's Representative. If the incident is significant enough all work activities will be

shut down until the condition can be resolved and PPM will provide an incident report within 24 hours to EMJ's and Owner's Representative. If notification calls are required, PPM, EMJ, and Owner's Representative will coordinate as to which party will provide notification. PPM will also provide weekly reports summarizing all actions taken related to site environmental conditions.

The attached Hazardous Materials Management Plan (Attachment C) further discusses the management process for all onsite waste.

3.0 Demolition

As part of the scope for the removal action, shoreline demolition activities are required to excavate impacted shoreline bank soil. Demolition activities include: removal of the current property fence along the shoreline; cutting back, when necessary, and grouting eight stormwater outfalls; removal of miscellaneous bank debris including concrete, brick, wood, and slag; and, removal of wooden piers/piles. After completion of the removal action, PPM will replace the security fence.

3.1 Physical hazards associated with demolition activities

There are a number of physical hazards associated with demolition activities and this document focuses on hazards associated with impacts to the environment. A detailed discussion of all physical hazards in relation to employee and personnel safety and protection is discussed in the Site Health and Safety Plan.

Before PPM initiates demolition activities, it will schedule a meeting with the Property Owner (JFC), EMJ, and all contractors and consultants to establish the sequence and responsibilities for each demolition activity. During removal of stormwater culverts and grouting operations, free liquids may be found at the end of the pipeline and will be contained and captured to the extent practicable. Captured liquids will be placed into 55 gallon drums or a 2,000 gallon storage tank for analysis by the Owner's (EMJ) representative prior to discharge. While only free water is expected to be found, oily residues or discolored liquids may be encountered. Any oily residue that leaks from the piping and discharges on the ground shall be cleaned up and placed in 55 gallon drums for proper disposal. PPM will ensure workers in contact with these liquids are wearing the proper personal protective equipment (PPE) and end of removed pipes are capped to prevent further release of liquids. Any pipelines removed which contain oily or discolored residue shall be placed on plastic separated from other demolition debris until EMJ and the Owner's Representative clears the piping for disposal. EMJ will coordinate all off-site disposal of contaminated materials, including sampling, analysis, and waste manifest. During grouting operations ensure grout is pumped into piping or hand placed at a controlled rate to prevent additional discharge of liquids or residue. If any culverts have a continuous flow of water that prevents removal or capping, consult EMJ's and Owner's Representative prior to proceeding.

Debris shall be direct loaded or stockpiled on the concrete pad between the Shop

Building and the Gas Storage Tanks. Materials not direct loaded shall have wattles placed around the stockpile when not being actively added to or removed from. Stockpiling of debris will be limited to material that must be sized prior to off-loading. Debris removed utilizing in-water equipment will be placed in sediment barges for off-loading at PPM's yard.

Sizing of removed debris will utilize excavator attached hydraulic hammers and chain saws. Sizing utilizing this equipment will likely cause limited flying debris. All sizing shall be performed on steel plates placed on the concrete pad to prevent damage to the pad. All distributed debris shall be sweep up, shoveled, or hand collected and brought back to the stockpile location for loading. Debris sized in place along the shoreline bank will be removed to the extent possible but may be left in place if below final subgrade stated in the design drawings or at the direction of the Owner's Representative. All debris discovered that presents a threat to human health or the environment shall be removed to the extent practicable.

Shoreline bank materials shall be direct loaded, to the extent possible. When shoreline bank materials cannot be direct loaded due to water content in material or trucking limitations, the materials shall be stockpiled in a designed stockpile containment area in accordance with the Construction Drawings. The stockpile area will be built with layer impermeable PVC liner, crushed rock, and ecology blocks. Ecology blocks will be placed around the three sides of the stockpile area. A PVC liner will be placed over the blocks and down onto the footprint of the stockpile area. As necessary, additional subgrade will be placed below the liner and graded to facilitate gravity drainage of water (water that passively leaves the materials in the stockpile area or rainfall) that comes into contact with the overlying liner. Permeable crushed rock will then be placed on top of the liner as a protective layer and a berm will be formed against the ecology blocks. The installed liner will be graded to a slope so as water passively leaves the soil it will flow to the enclosed section of the stockpile area for a 4" pump to remove the water and process it through the water treatment system as defined in the Water Treatment Plan, Appendix G of the RAWP. In the event of a storm, stockpiled soil and sediment will be covered with plastic to minimize collection of potentially impacted storm related runoff water.

During debris, soil, and sediment loading operations, all personnel will stand clear of the path between the truck and the excavator or loader. Plastic will be placed on the ground where soil or sediment could be spilled from an excavator or loader. A laborer will be on the ground to sweep up any spilled materials when it is safe to enter the loading zone. All trucks to be loaded will be equipped with automatic tarps. The laborer will perform a 360-degree walk around of the truck prior to departure to ensure there is no spilled soil or sediment on the truck. Any soil or sediment found on the truck will be removed prior to departure.

3.2 Inventory of anticipated materials to be generated during demolition activities

Materials generated during demolition activities will include:

- Wooden piers/piles
- Slag
- Concrete
- Brick
- Possible miscellaneous construction or metal debris
- Plastic, steel, and/or iron piping
- Aluminum or steel fencing
- Clearing and grubbing vegetation

3.3 Chemical hazards/chemicals generated during demolition activities

Based on the Contract Documents provided, it is not expected that chemical hazards will be generated during the execution of the demolition activities beyond encountering adjacent impacted soils and sediments. However, because heavy equipment is being used some chemical hazards must be considered. Fuels, oils and other fluids will be used onsite during equipment fueling and maintenance operations. These chemical hazards pose a risk for worker exposure. PPM will manage this risk by training employees on and requiring implementation of the project SPCC included as an attachment to this plan. All fueling shall be performed in accordance with the SPCC.

The one demolition activity which may generate a chemical hazard concern is the eight culverts required to be grouted or cut back prior to grouting in place. As the historical inputs to these culverts cannot be verified, if fluids are encountered, they will be handled as identified above in Section 3.1.

In order to prevent chemical releases or stormwater runoff that may impact the environment, control measures have been planned for the Jorgensen project site. The SPCC (Attachment B) discusses controls related to fuel and fueling operations. The SWPPP (Attachment A) discusses controls related to stormwater runoff and erosion. Floating containment booms will be placed in the waterway prior to start of the demolition activities to contain any floating debris that may enter the waterway. Oil absorbent booms will be placed inside the debris booms to capture unanticipated oils or greases released from groundwater and sediment during demolition and soil/sediment excavation activities.

4.0 MSDS System

The Material Safety Data System is an integral part of any construction project or industrial operating facility. The system is designed to:

- Inventory potential chemical hazards present at a facility
- Plan accordingly for management of chemicals present
- Detail precautions and training required when using chemical
- Address how to manage chemical spills
- Document the health and environmental hazards the chemical poses

4.1 Procedures for logging chemicals

All new chemicals brought on site, whether they are stored and not utilized or used, must be accompanied by a Material Safety Data Sheet (MSDS). Chemical suppliers generally have the MSDS for a product online on the company website. If the MSDS is unable to be found online and was not provided with the shipment, the vendor supplying the chemical shall be contacted by the Contractor to obtain a copy of the MSDS.

JFC must have a list of any proposed new chemicals to be introduced to the JFC property. JFC must have that list and an opportunity to control and even reject introduction of new chemicals at least two weeks in advance. The MSDS's must be made available to JFC and all site workers during construction activities and the introduction of new chemicals to the site should be discussed in the daily/shift tailgate meeting. Prior to using the chemicals, workers are required to review the MSDS for that product. The MSDS binder will be reviewed weekly by the site H&S Officer to ensure it is completely up to date.

The following is a list of chemicals anticipated for this project:

- fuel
- Lubricants
- Polymer
- Chitosan testing kit chemicals
- Granular activated carbon
- Cleaning chemicals
- Stabilization compounds

Additional chemicals may be identified during the execution of the project and will be added to the MSDS binder. The MSDS binder will be maintained on the project site by the H&S Officer.

4.2 MSDS Log Location

The MSDSs will be stored in the PPM construction office located onsite (as identified in Figure 1) in a binder labeled MSDS System. Copies of the MSDS binder shall be located on the dredge barge and water treatment barge and contain at least all chemicals that would be utilized or placed on in-water equipment.

4.3 Hazardous Materials Management Plan

The HMMP (Attachment C) provides additional details related to the MSDS System and process.

5.0 Stockpiling

Due to the limited staging footprint on this project, PPM plans to minimize stockpiling of excavated and backfill materials. However, there will be stockpiling of some materials during the course of the project. Stockpiled materials may include, but are not limited to,

demolition debris, excavated shoreline bank materials, upland backfill gravel, filter materials, rip rap, and habitat substrate. Signs will be in place adjacent to all stockpiled material indicating the nature of the stockpiled materials, including whether they are pending offsite disposal or placement along the shoreline bank.

5.1 Method

With the exception of demolition debris, all stockpiled construction materials will be placed within a contained stockpile area. The stockpile area will be built with layer impermeable PVC liner, crushed rock, and ecology blocks. Ecology blocks will be placed around the three sides of the stockpile area. A PVC liner will be placed over the blocks and down onto the footprint of the stockpile area. As necessary, additional subgrade will be placed below the liner and graded to facilitate gravity drainage of water (water that passively leaves the materials in the stockpile area or rainfall) that comes into contact with the overlying liner. Permeable crushed rock will then be placed on top of the liner as a protective layer and a berm will be formed against the ecology blocks. The installed liner will be graded to a slope so as water passively leaves the soil it will flow to the enclosed section of the stockpile area for a 4" pump to remove the water and process it through the water treatment system as defined in the Water Treatment Plan, Appendix G of the RAWP. Water that discharges from the impacted soil or sediment stockpile will be captured and contained in 18,000 gallon tanks on site and handled in accordance with the Water Management and Treatment Plan. The impacted soil and sediment stockpile area will be covered with plastic if there is a potential for rain prior to the next work window. Sand bags shall be placed over the plastic to secure the plastic in place. Wattles will be placed around the perimeter of the stockpile in accordance with the SWPPP.

Backfill materials staged for use the same day as delivery shall not be placed in a stockpile area. If backfill material is placed on the bank, it will be compacted by the end of the work day, or must be located above the high water line.

5.2 Locations

The stockpile staging areas are shown on Figure 1. The stockpile staging areas sizes may be adjusted in the field due to a limited work area.

5.3 Tracking

A stockpile tracking sheet will be maintained by the Site Superintendent. The tracking spreadsheet will minimally identify the stockpiled material, location of stockpile (if more than one stockpile is in the stockpile staging area where within staging area the stockpile is located), approximate volume, and whether BMPs are in place. Inspections, by the Contractor and Owner's Representatives, of stockpiles will be completed at the end of each work day to ensure proper BMPs are in place and water has been controlled.

5.4 Controls

Only authorized personnel are allowed to add to stockpiles. Stockpiles will be maintained to minimize the risk of unauthorized releases from the site or work area. Fencing around the work zone and 24-hour security at the Jorgensen project site will prevent inadvertent contact by unauthorized personnel with the stockpiled materials. Temporary security fencing will be installed during the initial mobilization before current security fencing is

removed.

6.0 Transportation and Disposal of Waste

Transportation and disposal of the sediment will be handled by PPM's subcontractor, Waste Management.

6.1 Process

6.1.1 Upland

Due to a limited work zone footprint and timing of haul truck arrival, upland materials will be loaded into an articulated haul truck, transported to the stockpile area, dewatered, and loaded by an excavator into Waste Management's truck and trailers. Trucks will be routed through the work zone in a one way circular route. The route may be cut off during excavation activities in certain areas truck will need to be backed down into the stock pile area. The trucks will pull in front of the stockpile area and will be loaded by the excavator.

6.1.2 In-Water

In-water excavated materials will be direct loaded into sediment barges. During loading operations water will be removed from the sediment barge to maximize capacity and minimize water content of dredged materials. At the completion of sediment loading into the barge, PPM will transport the barge to its main yard for off-loading. A second sediment barge will be staged on the opposite side of the dredge barge to allow for continuous operation. After the barge is unloaded, the barge will be staged at the PPM yard in preparation for taking the empty barge to the Jorgensen project site.

6.1.3 Schedule A

The TSCA sediment within the cofferdam will be excavated from the shoreline by an excavator and directly loaded into truck and trailers for disposal. Truck and trailers one at a time will be backed down to the excavator to be loaded. The trailer beds will be lined with PVC liners to ensure a water tight seal is established in the event any residual water is within the soil. A spill apron will be used to capture potential minor releases from the excavator bucket during loading into the trailers.

6.2 Submittals

Tickets of the disposals will be submitted to the Owner's Project Engineer on a daily basis. Any other load tickets, bill of lading, or manifests will be submitted to the Owner's Project Engineer as needed.

7.0 Unanticipated Waste Streams

If potentially hazardous wastes not previously characterized are encountered in upland or shoreline areas, all work will cease in the affected area. Notification will be made to the Owner and JFC. PPM will coordinate with the Owner and JFC to identify the path forward. Personnel will maintain a clear distance from the waste until further characterization determines it is safe to proceed and a plan for waste removal has been established at which point work may resume in the affected area.

If potentially hazardous wastes not previously characterized are encountered during dredging, all dredging will cease in the affected area. No further dredging will occur in the affected area. Notification will be made to the Owner and JFC. PPM will coordinate with the Owner and JFC to identify the path forward. Once a plan has been developed for the waste removal work will resume in the affected area.

8.0 Site Maintenance/Housekeeping

At all times site maintenance and housekeeping shall be maintained by PPM. Good housekeeping practices ensure the site is orderly and presentable, as well as present a safer environment for travel throughout the site. In addition to these benefits, site maintenance is essential to ensure proper stormwater controls. Construction Best Management Practices require maintaining roadways and stockpile areas to minimize the potential for sediment laden stormwater runoff. See the SWPPP (Attachment A) for further information.

9.0 Site Security

The Jorgensen Forge facility forges military components for the United States (US) government and is a secured facility. Only US citizens are allowed within the facility unescorted and access control of the site must be maintained at all times. In order to maintain access control of the site, a temporary fence must be installed at the upland boundary of the PPM work area. Entry into and out of this area must be continually monitored by security forces posted at points of egress and all visitors and site workers must sign in and out. An access roster will be given to the guard on a weekly basis. On water workers that do not access the work area through the Jorgensen property are excluded from checking in with security. If an unauthorized visitor arrives on site, PPM will escort the person to on duty security officer located at the front access to the JFC facility. No access from the water to upland areas shall be given to any person not associated with PPM or PPM's subcontractors.

10.0 Air Pollution Control Procedures

Work in the Seattle area requires strict emission controls to minimize air pollution. Air pollution occurs in various forms from equipment exhaust to nuisance dust to dust and particulates generated during demolition activities. All dedicated construction equipment shall use ultra-low sulfur diesel fuel, be Tier 4 compliant for land based heavy construction equipment, have emissions controls for large in water equipment, be maintained in good working order to minimize poor combustion and burning oil in engines, and be shut down when equipment is idle for more than 5 minutes.

On-site travel paths shall be swept with brooms and street sweepers, as needed, to maintain roadways and site roads free from tracked dust. If dirt impacts off-site roads from construction operations, PPM will immediately clean roadways. Work zones will be lightly wetted or misted to prevent excessive dust generation from work activities.

Demolition activities, especially concrete breaking, can generate a significant quantity of dust. Not only is the particulate matter a concern but silica found in concrete can be a health hazard to workers. During concrete crushing and other demolition activities, water shall be used to suppress dust. If upland and bank soil is found to be sufficiently dry water will be used during excavation, to control dust. If permits are required to be obtained prior to and related to demolition activities, PPM will obtain all permits.

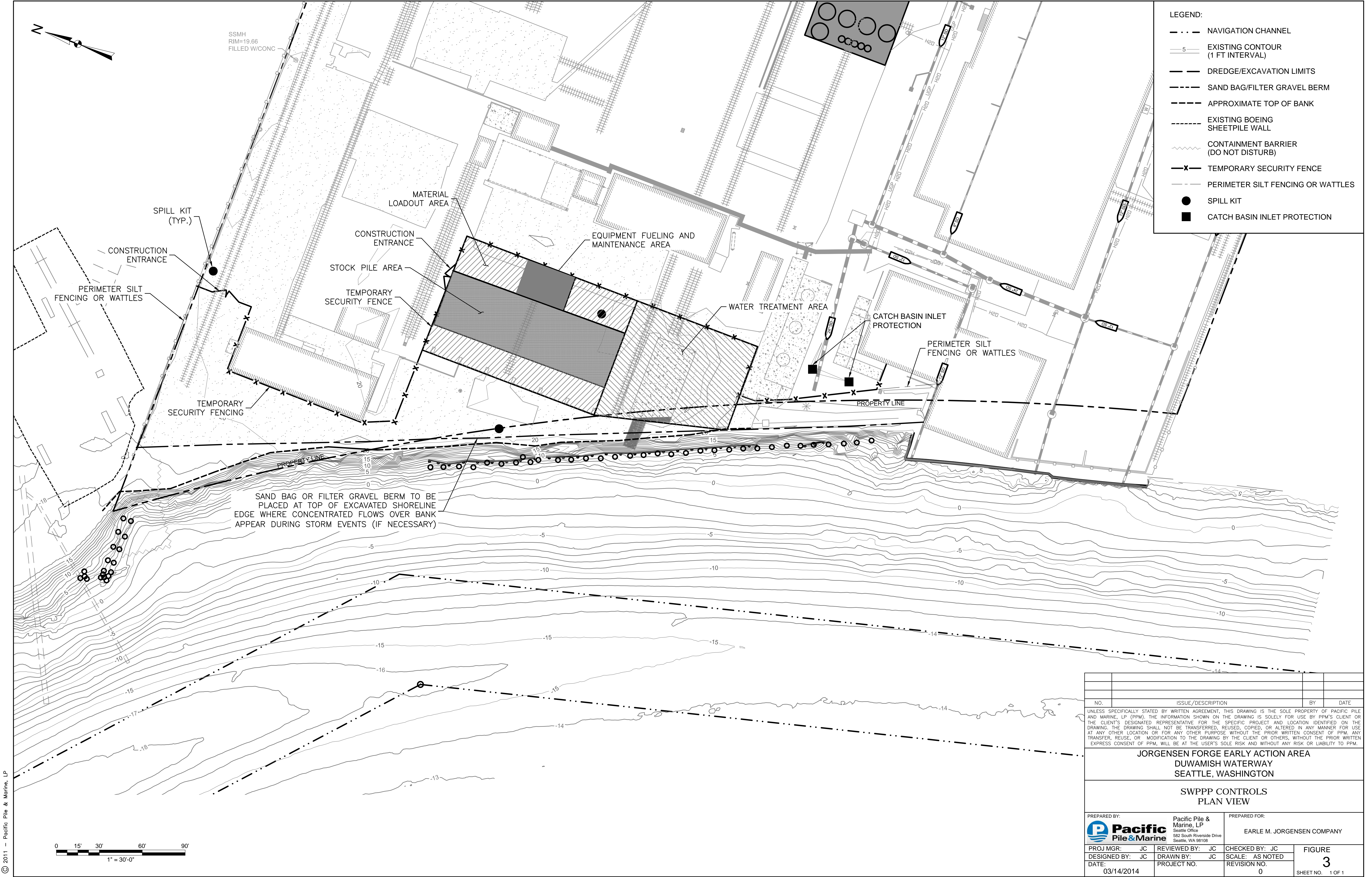
11.0 Noise Management

As the Jorgensen Forge facility is located on the Lower Duwamish waterway in an industrial area, extensive noise reduction efforts are not required. Active work may be performed at all hours but attempts should be made to limit or control excessive noise. Generally, through proper maintenance of construction equipment, excessive noise can be controlled to the degree possible. No equipment shall have factory installed noise reduction measures bypassed or removed. Workers shall adhere to the hearing protection requirements identified in the Health and Safety Plan.

12.0 Protection of groundwater

As most excavation activities are occurring at the shoreline bank, impacts to groundwater are unlikely. However, the stormwater pipeline connection will require excavating a trench to up to ten feet below ground surface to connect to the end of existing piping away from the bank. Spills from oils, fuels, or other potentially hazardous chemicals could impact groundwater resources. Therefore all fueling and maintenance should occur away from excavation areas and on concrete pads or within a specifically designed fueling area as discussed in the attached SPCC. All equipment should be inspected for leaks before beginning each shift and periodically through the work day.

Figure 1- Stockpile and Staging Area



Attachment A- Stormwater Pollution Prevention Plan

STORMWATER POLLUTION PREVENTION PLAN



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1.0 Purpose & Objective

This Stormwater Pollution Prevention Plan (SWPPP) addresses management of stormwater runoff during in-water and shoreline bank construction activities associated with the construction of the Jorgensen Forge Early Action Area Cleanup. This SWPPP does not address spills of materials used during construction; the plans and procedures for spill management are presented in the Spill Prevention, Control and Countermeasures Plan (SPCC Plan), Attachment A of Appendix C to the RAWP.

Background and Project Description

The Jorgensen Forge facility is located at 8531 E. Marginal Way S., Tukwila, WA 98108 (site). Construction activities associated with the Project include intertidal, subtidal, and shoreline bank work adjacent to the Lower Duwamish Waterway (LDW). The construction activities are being implemented as specified in the Contract Documents and the associated Construction Drawings. Construction activities will include removal and replacement of debris, soil and sediment from the shoreline bank and within the LDW. Jorgensen Forge Corporation has a Storm Water Pollution Prevention Plan – Industrial Storm Water General Permit (NO. WAR – 003231) for the Site (Anchor QEA, February 2013).

This specific SWPPP has been prepared for work performed directly on and adjacent to the LDW associated with the construction of the Jorgensen Forge Early Action Area Cleanup. Inherent to the work, equipment will be staged, operated, maintained, and re-fueled within the limits of the LDW.

Purpose and Basis

The purpose of this SWPPP is to describe the proposed construction activities and all temporary erosion and sedimentation control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and record keeping that will be implemented during construction. The objectives of the SWPPP are to:

- Describe the best management practices (BMPs) to be followed to prevent erosion and sedimentation and to identify, reduce, and eliminate or prevent stormwater contamination and water pollution arising due to construction activities.
- Describe measures to protect surface water quality and groundwater quality.
- Describe measures to control peak volumetric flow rates and velocities of construction stormwater discharges.

This SWPPP addresses the intents of the City of Tukwila Stormwater Management

Program and was prepared using Ecology's Construction Stormwater Pollution Prevention Plan template, as guidance. The template was modified to address requirements of the City of Tukwila Stormwater Management Program – 2012 Update, the City of Tukwila uses the minimum design standards of the 2009 King County Surface Water Design Manual with an option to use the Department of Ecology's Surface Water Management Manual for Western Washington.

The primary BMPs that will be implemented during construction of the corrective Measure are specified in the *Stormwater Management Manual for Western Washington* (SWMMWW) (Ecology, 2012).

Organization

This SWPPP was prepared based on the requirements set forth in the SWMMWW (Ecology, 2012). This SWPPP is divided into the following seven main sections:

- Section 1.0 – Introduction. This section describes the objectives and organization of this SWPPP.
- Section 2.0 – Site Description. This section describes the project background, existing conditions in the work area, and construction activities.
- Section 3.0 – Construction Stormwater BMPs. This section provides a detailed description of the BMPs to be implemented based on the 13 required elements specified in the SWMMWW. Timing of the BMP implementation in relation to the overall project schedule will also be discussed.
- Section 4.0 – Pollution Prevention Team. This section identifies the appropriate contact names (emergency and non-emergency), monitoring personnel, and on-site temporary erosion and sedimentation control inspector.
- Section 5.0 – Inspection and Monitoring. This section provides a description of the inspection and monitoring requirements for maintaining zero stormwater discharge from disturbed areas.
- Section 6.0 – Reporting and Record Keeping. This section describes the requirements for documentation of BMP implementation, site inspections and monitoring, and changes to the implementation of certain BMPs necessitated by construction activities.

2.0 Site Description

The Site occupies approximately 20 acres between Slip No. 4 and Slip No. 6 on the east bank of the LDW at approximately river mile marker 3.6. The Site is situated approximately 4.7 miles south and upstream of Elliot Bay. The Site is bordered on the west by the LDW, on the north by Boeing Company's (Boeing) Plant 2 facility, on the east by the East Marginal Way South arterial and the Boeing

Field/King County International Airport, and on the south by a vacant lot owned by Boeing.

Construction activities will be limited to the areas along the shoreline bank. Access will be provided from East Marginal Way through a security controlled gate then via a shared paved road way located near the north boundary of the Site. A bermed staging and stockpile area will be established above the LDW shoreline bank.

The irregular shoreline along the Site includes abandoned culverts, derelict piles, debris and impacted soil which will be removed as part of this Project.

Proposed Construction Activities

The Project activities are being implemented as specified in the Contract Documents and the associated Construction Drawings. Project activities will include; removal of piling, removal and disposal of timbers concrete, metal, asphalt, logs and debris below the top of the bank, plugging and grouting unused outfalls after removing extent of pipe, and replacement of soils and sediments from the shoreline and within the LDW.

Prior to implementation of the Project, all in-service utilities will be identified. Once all backfilling activities have been completed to final grades, restoration of the Early Action Area will begin.

3.0 Construction Stormwater BMPs

The State of Washington's Department of Ecology (Ecology) has identified 13 elements of water quality and downstream resource protection in the SWMMWW (Ecology, 2012). This section describes the BMPs that will be implemented to address these 13 elements. Ecology has likewise determined that the King County requirements are equivalent to SWMMWW. As a result, by addressing the 13 elements of the SWMMWW, this SWPPP addresses the requirements of King County and the Department of Ecology. As the City of Tukwila uses the minimum standards of King County, this SWPPP meets their requirements.

All BMPs identified in this section are from Volumes II or IV of the SWMMWW, unless noted otherwise.

Element #1 – Mark Clearing Limits and Sensitive Areas

To protect adjacent property, protect workers at the job site, and reduce the area exposed

to construction, the limits of the work area will be clearly marked before activities begin. However, since some work will occur in a tidal area, the construction area will not be marked on the shoreline side of the work area. Temporary fencing will be installed along the project limits. No natural vegetation in the work area will be retained as all vegetation falls within the limits of the bank pullback area, and therefore BMP C101 (Preserving Natural Vegetation) is not applicable.

The BMPs relevant to marking the clearing limits that will be applied for this project include:

- High Visibility Fence (BMP C103)
- Silt Fence (BMP C233)

Element #2 – Establish Construction Access

Construction access or activities in this work area shall be on existing pavement and should not result in equipment accessing unpaved areas. All loading of trucks will occur on plastic and a laborer will be placed on the ground during loading to sweep spilled materials out of the truck tire pathways to prevent tracking soil and sediment. Additionally, the laborer will perform a walk around of the truck prior to leaving and sweep off any potential flying object debris from the truck sides. Therefore, tracking of sediment onto public roads is expected to be at a minimum. If truck tires contain soil or sediment that cannot be removed through dry decontamination methods it will be removed with a wheel wash system. In addition, if necessary, street sweeping and street cleaning will be employed to prevent sediment from entering state waters.

A paved staging area will be used during the project; water management facilities, stockpile management areas, and parking are not expected to occur outside of these areas.

Element #3 – Control Flow Rates

As no work will be performed in the uplands but rather materials will be only staged in the uplands, erosion runoff and controlling flow rates is not directly applicable to this site. However, the perimeter of all stockpiles will be encompassed by straw wattles to prevent high turbidity runoff from leaving the stockpile.

All excavated slopes of the shoreline bank will be backfilled and therefore wattles will not be installed on the slope. The final backfill surface is not designed for final installation of wattles and is a pre-washed sandy aggregate, which will be within the intertidal zone of influence and is not expected to significantly erode.

Element #4 – Install Sediment Controls

The Site is located in an area with 100% impervious surfaces. Stormwater runoff will be

controlled through containment within a stockpile area for excavated or backfill materials. Additionally, the Site will be kept clean at all times to prevent the collection of dirt on impervious surfaces from eventually be discharged into stormwater drains. Any stormwater runoff in contact with excavated soil or sediment will be captured and stored in 18,000 gallon storage tanks for treatment and discharge, under permit, to the King County sewer system, or removal from Site for disposal.

In-water, sediment will be controlled during excavation of the shoreline bank through the use of silt curtains in the LDW. Silt curtain use will be limited to only where necessary during dredging and backfill operations due to the logistical difficulties are working around the silt curtains. However, upstream and downstream water quality monitoring will be performed in the LDW 150 and 300 feet from the in-water construction work zone to monitor turbidity and chemicals within the LDW. Any water quality exceedances in excess of the EPA Water Quality Memorandum criteria will require modifying dredging operations or halting operations if readings do not begin to fall.

The BMPs relevant to sediment controls that will be applied for this project include:

- Construction Stormwater Filtration (BMP C251)

Element #5 – Stabilize Soils

The excavation in the Early Action Area will be implemented under a U.S. Army Corps of Engineers 404 permit. Upland soil stockpiles will be covered in plastic inside the stockpile area and a 40-mil PVC liner will be placed under all stockpiles within the soil stockpile area to capture and contain all water. Backfill material stockpiles outside excavation footprints will be stored on contained plastic sheeting and covered in plastic. Debris will be placed on plastic but not covered, unless necessary and can be performed safely.

Water will be applied as necessary to control airborne dust.

The specific BMPs for soil stabilization that will be used on this project include:

- Plastic Covering (BMP C123)
- Dust Control (BMP C140).

Element #6 – Protect Slopes

Where adjacent areas convey stormwater toward the construction area perimeter berms will be used to prevent run-on.

The specific BMPs to be used for protecting slopes on this project include:

- Perimeter Berms (such as sand bags, temporary asphalt curbing, or equivalent)

Element #7 – Protect Storm Inlets

Catch basins proximate to vehicle paths in the project vicinity will be protected with storm drain inlet protection (BMP C220) as shown on the TESC plans.

Excavated soils that are “wet” will be placed on a 40 mil PVC liner within the soil stockpile area to capture and contain all water. The water collected from this area will be handled in accordance with the Water Management and Treatment Plan included in Appendix G of the RAWP.

Element #8 – Stabilize Channels and Outlets

This element is not applicable to this Site as it is a flat site that is paved and water sheet flows based on the upland topography.

Element #9 – Control Pollutants

All pollutants, including waste materials and excavation debris, that occur on the Site shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to keep the project Site clean, well organized, and free of debris. An SPCC Plan has been prepared for the project and is included as Attachment A of Appendix C to the RAWP.

As applicable situations occur during the project, the following BMPs will be implemented to control specific sources of pollutants:

- Material delivery, construction equipment, and/or petroleum product storage/dispensing (BMP C153 and BMP S412, S414, and S419).
- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.

Element #11 – Maintain BMPs

All temporary erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with the specifications for each particular BMP. All temporary erosion and sediment control BMPs shall be removed within 30 days after the final stabilization is achieved or after the temporary BMPs are no longer needed. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently

stabilized.

As a large project, a Certified Erosion and Sediment Control Lead (CESCL) will inspect the BMPs. Visual monitoring of the BMPs will be conducted at least once every calendar week and within 24 hours of any rainfall event that causes a discharge from the Site. If construction activities are suspended, and the work area is temporarily stabilized, the inspection frequency will be reduced to once every month.

BMPs will be inspected through the following procedures:

- A CESCL shall be present at the project Site or available on call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in this SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, appropriate BMPs or design changes shall be implemented as soon as practicable.
- The SWPPP shall be modified if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the Site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within 7 days following the inspection.

The specific BMPs that relate to maintaining BMPs include:

- Materials On Hand (BMP C150)
- Certified Erosion and Sediment Control Lead (BMP C160)

Element #12 – Manage the Project

Proper scheduling of the project will ensure that non-stabilized soils are exposed for the shortest duration possible. Additionally, planning properly for installing and maintaining stormwater controls will prevent or minimize the potential for inadvertent releases. A SWPPP shall be maintained in the PPM Site office and readily accessible to all workers at any time. Weather should be monitored throughout the duration of the job and if inclement weather is anticipated, preventative measures should be taken. The SWPPP is a living document and shall be modified, as necessary to ensure protection of the environment at all times should initially planned measures prove insufficient.

The project Site is located west of the Cascade Mountain Crest. As such, the dry season is considered to be from May 1 to September 30, and the wet season is considered to be from October 1 to April 30. Work shall begin in mid-June and with all activities completed by September 22.

Element #13 – Protect Low Impact Development BMPs

This Element is not applicable to the work performed at this Site.

BMP Implementation

The BMP implementation schedule will be driven by the construction schedule. BMPs will be installed in each excavation area prior to any soil-disturbing activity per the approved project schedule.

4.0 Pollution Prevention Team

This section defines the key roles and responsibilities for implementing the SWPPP, and identifies the specific individuals who will fill those roles.

Roles and Responsibilities

The pollution prevention team is responsible for implementing the SWPPP and comprises the following personnel:

- CESCL – to be called upon in case of failure of any erosion and sediment control measure;
- Jorgensen Construction Manager – primary contractor contact; Site representative for the Boeing; responsible for Site inspections of BMPs and issuing instructions and drawings to the contractor's Site supervisor or representative;
- Emergency Ecology Contact – individual to be contacted at Ecology in case of emergency;
- Emergency Owner Contact – individual that is the Owner or representative of the Owner to be contacted in case of emergency;
- Non-Emergency Ecology Contact – individual at Ecology that can be contacted if required; and
- Monitoring Personnel – personnel responsible for conducting water quality monitoring; for most sites this person is also the CESCL.

Team Members

Names and contact information for individuals identified as members of the pollution prevention team:

TITLE	NAME	PHONE NUMBER
CESCL	Marty Locke	206-963-8927
Alternate CESCL	Dustin Slimp	206-999-1503
Construction Supervisor	Greg Anderes	206-450-7574
Emergency Ecology Contact	24-Hour Emergency Contact	1-425-649-7000
Emergency Owner Contact	TBD	
Non-Emergency Ecology Contact	TBD	
Monitoring Personnel	Marty Locke, Dustin Slimp	See Above

5.0 Inspection and Monitoring

Monitoring of BMPs includes visual inspection of BMPs and documentation of the inspection and monitoring findings in a Site log book. A project logbook will be maintained for all construction activities and will include a record of:

- Implementation of the SWPPP and other permit requirements; and
- Site inspections.

For convenience, the “Site Inspection Checklist” includes the required information for the project log book (included as an exhibit to this SWPPP). This SWPPP may function as the project logbook if desired, or the forms may be separated and included in a separate project logbook. However, if separated, the project logbook must be maintained at the Site or within reasonable access to the Site and be made available upon request.

Site Inspection

All BMPs will be inspected, maintained, and repaired as needed for continued performance of their intended function. The inspector will be a CESCL in accordance with BMP C160. The name and contact information for the CESCL is provided in Section 4 of this SWPPP.

Site inspection will occur in all areas disturbed by construction activities and used for staging and stockpiles. The Site inspector will evaluate and document the effectiveness of the installed BMPs and determine if it is necessary to repair or replace any of the BMPs.

All maintenance and repairs will be documented in the project logbook or on forms provided in this document. All new BMPs or design changes will be documented in the SWPPP as soon as possible.

BMP inspections will be conducted at least once a week and within 24 hours following any significant rainfall event. The frequency of Site inspections can be reduced to once every month if construction activities are suspended and temporary stabilization measures are implemented.

Stormwater Quality Monitoring

Water that is collected from equipment travel areas and the designated soil/sediment staging area will be handled in accordance with the Water Management and Treatment Plan.

6.0 Reporting and Record Keeping

This section describes reporting and record-keeping requirements to document implementation of stormwater control measures.

Record Keeping

This section specifies the records to be kept to document implementation of this SWPPP.

Site Log Book

A project logbook will be maintained for all on-site construction activities and will include a record of:

- Implementation of the SWPPP and other permit requirements;
- Implementation of BMPs not included in the SWPPP;
- Maintenance of BMPs; and
- Site inspections.

Water quality monitoring will be conducted as part of the dredging work (not included in this SWPPP).

For convenience, the “Site Inspection Checklist” contains the required information for the project logbook. Project-specific maps and forms to facilitate tracking BMP installation, inspection, and maintenance for the project duration will be added and kept with the project log book.

Records Retention

Records of all monitoring information (project log book, inspection reports/checklists, etc.), this SWPPP, and any other documentation of compliance with permit requirements will be retained during the life of the construction project and for a minimum of 3 years after construction is completed.

Access to Plans and Records

The SWPPP and project logbook will be retained at the project Site or within reasonable access to the project Site and will be made available immediately upon request.

Updating the SWPPP

This SWPPP will be modified if the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the project Site or there has been a change in design, construction, operation, or maintenance at the Site that has a significant effect on the discharge, or potential for discharge, of pollutants to the waters of the State. The SWPPP will be modified within 7 days of determination based on inspection(s) that

additional or modified BMPs are necessary to correct problems identified, and an updated timeline for BMP implementation will be prepared.

The SWPPP will also be amended on a yearly basis for each construction season to incorporate construction progress, design changes, and update the milestones for each subsequent construction season.

Reporting

This section specifies reporting requirement related to implementation of the SWPPP.

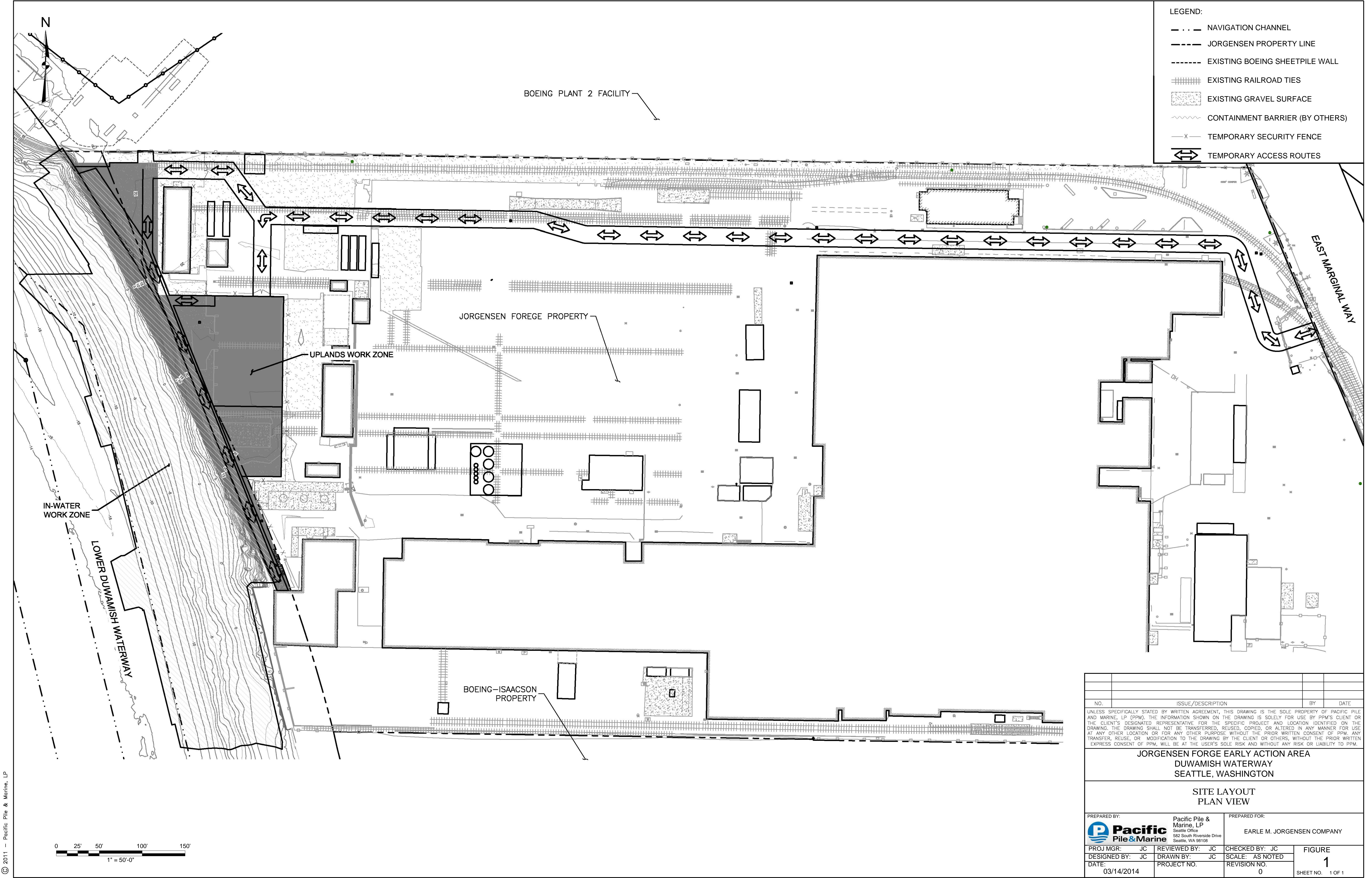
Discharge Monitoring Reports

Since discharge monitoring will be managed as part of the dredging work to meet water quality objectives, no regular reporting is required.

Notification of Noncompliance

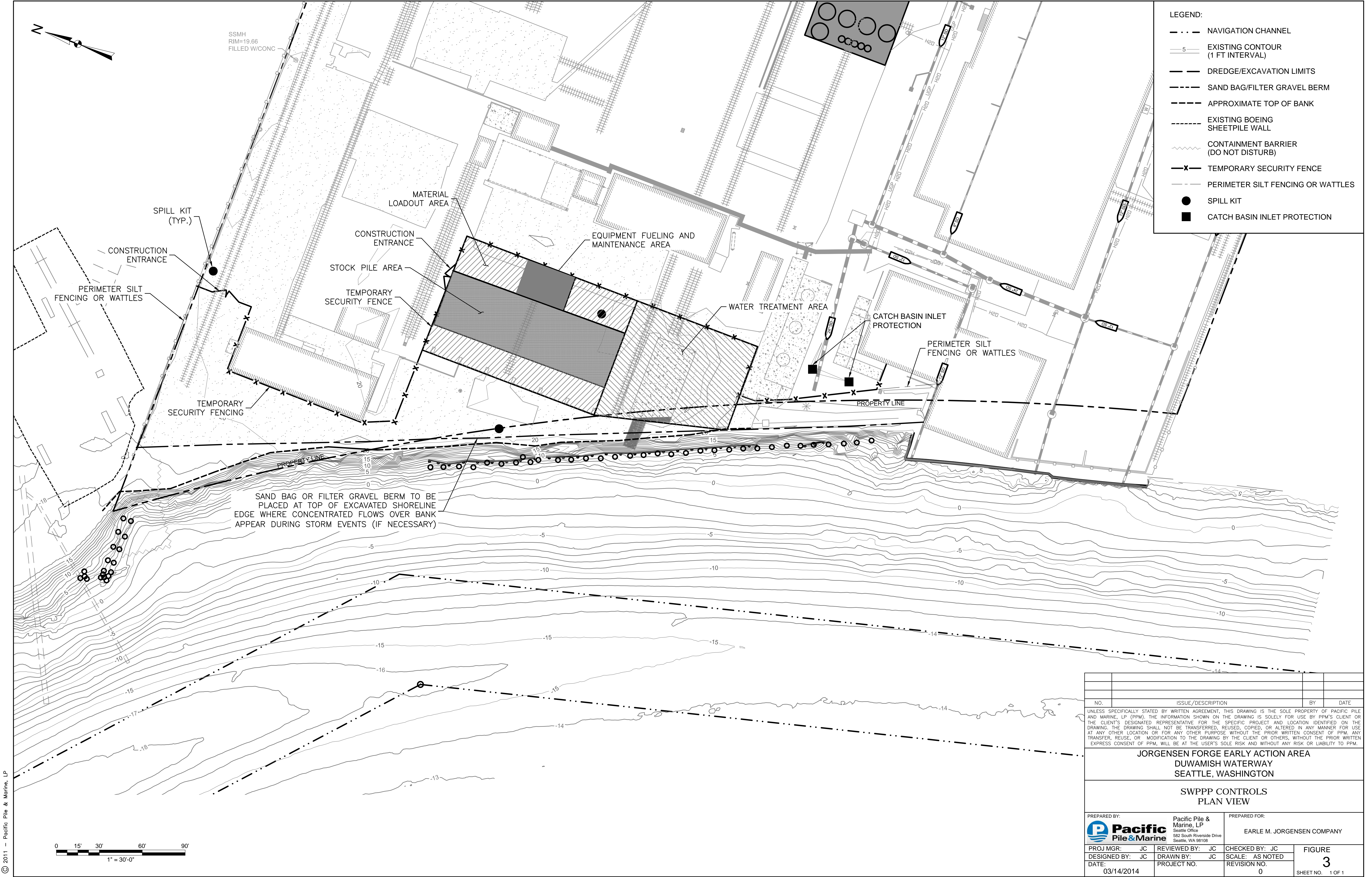
Notification of noncompliance will be conducted in accordance with the requirements of the EPA Agreement.

Figure 1- Site Map



NO.		ISSUE/DESCRIPTION	BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF PACIFIC PILE AND MARINE, LP (PPM). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY PPM'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF PPM. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF PPM, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO PPM.				
JORGENSEN FORGE EARLY ACTION AREA DUWAMISH WATERWAY SEATTLE, WASHINGTON				
SITE LAYOUT PLAN VIEW				
PREPARED BY:		Pacific Pile & Marine, LP Seattle Office 982 South Riverside Drive Seattle, WA 98108		PREPARED FOR: EARLE M. JORGENSEN COMPANY
PROJ MGR:	JC	REVIEWED BY:	JC	CHECKED BY: JC
DESIGNED BY:	JC	DRAWN BY:	JC	SCALE: AS NOTED
DATE:	03/14/2014	PROJECT NO.		REVISION NO. 0
FIGURE 1				SHEET NO. 1 OF 1

Figure 2- SWPPP Controls



Attachment A- SWPPP Checklist

Construction Stormwater SITE INSPECTION CHECKLIST

Project_____ Permit No._____ Inspector_____ Date_____ Time_____

Site BMPs	Overall Condition	Need Repair?	Comments/Observations
Clearing Limits • <i>Buffer Zones around sensitive areas</i> • •	G F P G F P G F P	Y N Y N Y N	
Construction Access/Roads • <i>Stabilized site entrance</i> • <i>Stabilized roads/parking area</i> •	G F P G F P G F P	Y N Y N Y N	
Control Flow Rates • <i>Swale</i> • <i>Dike</i> • <i>Sediment pond</i> • <i>Sediment trap</i> • •	G F P G F P G F P G F P G F P G F P	Y N Y N Y N Y N Y N Y N	
Install Sediment Controls • <i>Sediment pond/trap</i> • <i>Silt fence</i> • <i>Straw bale barriers</i> • • •	G F P G F P G F P G F P G F P G F P	Y N Y N Y N Y N Y N Y N	
Preserve Vegetation/Stabilize Soils • <i>Nets and blankets</i> • <i>Mulch</i> • <i>Seeding</i> • •	G F P G F P G F P G F P G F P	Y N Y N Y N Y N Y N	
Protect Slopes • <i>Terrace</i> • <i>Pipe slope drains</i> • •	G F P G F P G F P G F P	Y N Y N Y N Y N	
Protect Drain Inlets • <i>Inserts</i> • •	G F P G F P G F P	Y N Y N Y N	
Stabilize Channels and Outlets • <i>Conveyance channels</i> • <i>Energy dissipators</i> •	G F P G F P G F P	Y N Y N Y N	
Control Pollutants • <i>Chemical Storage Area covered</i> • <i>Concrete handling</i> •	G F P G F P G F P	Y N Y N Y N	
Control De-watering •	G F P	Y N	

G=Good F=Fair P=Poor Y=Yes N=No

**Construction Stormwater
SITE INSPECTION CHECKLIST**

Project _____ Permit No. _____ Inspector _____ Date _____ Time _____

Will existing BMPs need to be modified or removed, or other BMPs installed? YES NO
IF YES, list the action items to be completed on the following table:

Actions to be Completed	Date Completed/ Initials
1.	
2.	
3.	
4.	
5.	
6.	

Describe current weather conditions

Approximate amount of precipitation since last inspection: _____ inches
and precipitation in the past 24 hours*: _____ inches
**based on an on-site rain gauge or local weather data.*

Describe discharging stormwater, if present. Note the presence of suspended sediment, "cloudiness", discoloration, or oil sheen.

Was water quality sampling part of this inspection? YES NO
If yes, record results below (attach separate sheet, if necessary):

Parameter:	Method (circle one)	Result	Units
Turbidity	tube, meter, laboratory		NTU (cm, if tube used)
pH	paper, kit, meter		pH standard units

Is the site in compliance with the SWPPP and the permit requirements? YES NO
If no, indicate tasks necessary to bring site into compliance on the "Actions to be Completed" table above, and include dates each job WILL BE COMPLETED.
If no, has the non-compliance been reported to Dept. of Ecology? YES NO
If no, should the SWPPP be modified: YES NO

Sign the following certification:
"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

Inspection completed on: _____ by: (print+signature) _____

Title/Qualification of Inspector: _____

Attachment B- BMPs

BMP C103: High Visibility Fence

Purpose

Fencing is intended to:

1. Restrict clearing to approved limits.
2. Prevent disturbance of sensitive areas, their buffers, and other areas required to be left undisturbed.
3. Limit construction traffic to designated construction entrances, exits, or internal roads.
4. Protect areas where marking with survey tape may not provide adequate protection.

Conditions of Use

To establish clearing limits plastic, fabric, or metal fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary to control vehicle access to and on the site.

Design and Installation Specifications

High visibility plastic fence shall be composed of a high-density polyethylene material and shall be at least four feet in height. Posts for the fencing shall be steel or wood and placed every 6 feet on center (maximum) or as needed to ensure rigidity. The fencing shall be fastened to the post every six inches with a polyethylene tie. On long continuous lengths of fencing, a tension wire or rope shall be used as a top stringer to prevent sagging between posts. The fence color shall be high visibility orange. The fence tensile strength shall be 360 lbs./ft. using the ASTM D4595 testing method.

If appropriate install fabric silt fence in accordance with [BMP C233](#) to act as high visibility fence. Silt fence shall be at least 3 feet high and must be highly visible to meet the requirements of this BMP.

Metal fences shall be designed and installed according to the manufacturer's specifications.

Metal fences shall be at least 3 feet high and must be highly visible.

Fences shall not be wired or stapled to trees.

Maintenance Standards

If the fence has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.

BMP C123: Plastic Covering

Purpose

Plastic covering provides immediate, short-term erosion protection to slopes and disturbed areas.

Conditions of Use

Plastic covering may be used on disturbed areas that require cover measures for less than 30 days, except as stated below.

- Plastic is particularly useful for protecting cut and fill slopes and stockpiles. Note: The relatively rapid breakdown of most polyethylene sheeting makes it unsuitable for long-term (greater than six months) applications.
- Due to rapid runoff caused by plastic covering, do not use this method upslope of areas that might be adversely impacted by concentrated runoff. Such areas include steep and/or unstable slopes.
- Plastic sheeting may result in increased runoff volumes and velocities, requiring additional on-site measures to counteract the increases. Creating a trough with wattles or other material can convey clean water away from these areas.
- To prevent undercutting, trench and backfill rolled plastic covering products.
- While plastic is inexpensive to purchase, the added cost of installation, maintenance, removal, and disposal make this an expensive material, up to \$1.50-2.00 per square yard.
- Whenever plastic is used to protect slopes install water collection measures at the base of the slope. These measures include plastic-covered berms, channels, and pipes used to convey clean rainwater away from bare soil and disturbed areas. Do not mix clean runoff from a plastic covered slope with dirty runoff from a project.
- Other uses for plastic include:
 1. Temporary ditch liner.
 2. Pond liner in temporary sediment pond.
 3. Liner for bermed temporary fuel storage area if plastic is not reactive to the type of fuel being stored.
 4. Emergency slope protection during heavy rains.
 5. Temporary drainpipe (“elephant trunk”) used to direct water.
- Plastic slope cover must be installed as follows:
 1. Run plastic up and down slope, not across slope.
 2. Plastic may be installed perpendicular to a slope if the slope length is less than 10 feet.
 3. Minimum of 8-inch overlap at seams.

Design and Installation Specifications

4. On long or wide slopes, or slopes subject to wind, tape all seams.
 5. Place plastic into a small (12-inch wide by 6-inch deep) slot trench at the top of the slope and backfill with soil to keep water from flowing underneath.
 6. Place sand filled burlap or geotextile bags every 3 to 6 feet along seams and tie them together with twine to hold them in place.
 7. Inspect plastic for rips, tears, and open seams regularly and repair immediately. This prevents high velocity runoff from contacting bare soil which causes extreme erosion.
 8. Sandbags may be lowered into place tied to ropes. However, all sandbags must be staked in place.
- Plastic sheeting shall have a minimum thickness of 0.06 millimeters.
 - If erosion at the toe of a slope is likely, a gravel berm, riprap, or other suitable protection shall be installed at the toe of the slope in order to reduce the velocity of runoff.
 - Torn sheets must be replaced and open seams repaired.
 - Completely remove and replace the plastic if it begins to deteriorate due to ultraviolet radiation.
 - Completely remove plastic when no longer needed.
 - Dispose of old tires used to weight down plastic sheeting appropriately.

***Maintenance
Standards***

***Approved as
Equivalent***

Ecology has approved products as able to meet the requirements of [BMP C123](#). The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology’s website at <http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html>

BMP C140: Dust Control

Purpose

Dust control prevents wind transport of dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters.

Conditions of Use

- In areas (including roadways) subject to surface and air movement of dust where on-site and off-site impacts to roadways, drainage ways, or surface waters are likely.

Design and Installation Specifications

- Vegetate or mulch areas that will not receive vehicle traffic. In areas where planting, mulching, or paving is impractical, apply gravel or landscaping rock.
- Limit dust generation by clearing only those areas where immediate activity will take place, leaving the remaining area(s) in the original condition. Maintain the original ground cover as long as practical.
- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources.
- Sprinkle the site with water until surface is wet. Repeat as needed. To prevent carryout of mud onto street, refer to Stabilized Construction Entrance ([BMP C105](#)).
- Irrigation water can be used for dust control. Irrigation systems should be installed as a first step on sites where dust control is a concern.
- Spray exposed soil areas with a dust palliative, following the manufacturer's instructions and cautions regarding handling and application. Used oil is prohibited from use as a dust suppressant. Local governments may approve other dust palliatives such as calcium chloride or PAM.
- PAM ([BMP C126](#)) added to water at a rate of 0.5 lbs. per 1,000 gallons of water per acre and applied from a water truck is more effective than water alone. This is due to increased infiltration of water into the soil and reduced evaporation. In addition, small soil particles are bonded together and are not as easily transported by wind. Adding PAM may actually reduce the quantity of water needed for dust control. Use of PAM could be a cost-effective dust control method.

Techniques that can be used for unpaved roads and lots include:

- Lower speed limits. High vehicle speed increases the amount of dust stirred up from unpaved roads and lots.
- Upgrade the road surface strength by improving particle size, shape, and mineral types that make up the surface and base materials.
- Add surface gravel to reduce the source of dust emission. Limit the amount of fine particles (those smaller than .075 mm) to 10 to 20 percent.

- Use geotextile fabrics to increase the strength of new roads or roads undergoing reconstruction.
- Encourage the use of alternate, paved routes, if available.
- Restrict use of paved roadways by tracked vehicles and heavy trucks to prevent damage to road surface and base.
- Apply chemical dust suppressants using the admix method, blending the product with the top few inches of surface material. Suppressants may also be applied as surface treatments.
- Pave unpaved permanent roads and other trafficked areas.
- Use vacuum street sweepers.
- Remove mud and other dirt promptly so it does not dry and then turn into dust.
- Limit dust-causing work on windy days.
- Contact your local Air Pollution Control Authority for guidance and training on other dust control measures. Compliance with the local Air Pollution Control Authority constitutes compliance with this BMP.

***Maintenance
Standards***

Respray area as necessary to keep dust to a minimum.

BMP C150: Materials on Hand

Purpose

Keep quantities of erosion prevention and sediment control materials on the project site at all times to be used for regular maintenance and emergency situations such as unexpected heavy summer rains. Having these materials on-site reduces the time needed to implement BMPs when inspections indicate that existing BMPs are not meeting the Construction SWPPP requirements. In addition, contractors can save money by buying some materials in bulk and storing them at their office or yard.

Conditions of Use

- Construction projects of any size or type can benefit from having materials on hand. A small commercial development project could have a roll of plastic and some gravel available for immediate protection of bare soil and temporary berm construction. A large earthwork project, such as highway construction, might have several tons of straw, several rolls of plastic, flexible pipe, sandbags, geotextile fabric and steel “T” posts.
- Materials are stockpiled and readily available before any site clearing, grubbing, or earthwork begins. A large contractor or developer could keep a stockpile of materials that are available for use on several projects.
- If storage space at the project site is at a premium, the contractor could maintain the materials at their office or yard. The office or yard must be less than an hour from the project site.

***Design and
Installation
Specifications***

Depending on project type, size, complexity, and length, materials and quantities will vary. A good minimum list of items that will cover numerous situations includes:

Material
Clear Plastic, 6 mil
Drainpipe, 6 or 8 inch diameter
Sandbags, filled
Straw Bales for mulching,
Quarry Spalls
Washed Gravel
Geotextile Fabric
Catch Basin Inserts
Steel “T” Posts
Silt fence material
Straw Wattles

***Maintenance
Standards***

- All materials with the exception of the quarry spalls, steel “T” posts, and gravel should be kept covered and out of both sun and rain.
- Re-stock materials used as needed.

BMP C151: Concrete Handling

<i>Purpose</i>	Concrete work can generate process water and slurry that contain fine particles and high pH, both of which can violate water quality standards in the receiving water. Concrete spillage or concrete discharge to surface waters of the State is prohibited. Use this BMP to minimize and eliminate concrete, concrete process water, and concrete slurry from entering waters of the state.
<i>Conditions of Use</i>	<p>Any time concrete is used, utilize these management practices. Concrete construction projects include, but are not limited to, the following:</p> <ul style="list-style-type: none">• Curbs• Sidewalks• Roads• Bridges• Foundations• Floors• Runways
<i>Design and Installation</i>	<ul style="list-style-type: none">• Wash out concrete truck chutes, pumps, and internals into formed areas only. Assure that washout of concrete trucks is performed off-

Specifications

site or in designated concrete washout areas. Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams. Refer to [BMP C154](#) for information on concrete washout areas.

- Return unused concrete remaining in the truck and pump to the originating batch plant for recycling. Do not dump excess concrete on site, except in designated concrete washout areas.
- Wash off hand tools including, but not limited to, screeds, shovels, rakes, floats, and trowels into formed areas only.
- Wash equipment difficult to move, such as concrete pavers in areas that do not directly drain to natural or constructed stormwater conveyances.
- Do not allow washdown from areas, such as concrete aggregate driveways, to drain directly to natural or constructed stormwater conveyances.
- Contain washwater and leftover product in a lined container when no formed areas are available,. Dispose of contained concrete in a manner that does not violate ground water or surface water quality standards.
- Always use forms or solid barriers for concrete pours, such as pilings, within 15-feet of surface waters.
- Refer to [BMPs C252](#) and [C253](#) for pH adjustment requirements.
- Refer to the Construction Stormwater General Permit for pH monitoring requirements if the project involves one of the following activities:
 - Significant concrete work (greater than 1,000 cubic yards poured concrete or recycled concrete used over the life of a project).
 - The use of engineered soils amended with (but not limited to) Portland cement-treated base, cement kiln dust or fly ash.
 - Discharging stormwater to segments of water bodies on the 303(d) list (Category 5) for high pH.

Maintenance Standards

Check containers for holes in the liner daily during concrete pours and repair the same day.

BMP C152: Sawcutting and Surfacing Pollution Prevention

<i>Purpose</i>	Sawcutting and surfacing operations generate slurry and process water that contains fine particles and high pH (concrete cutting), both of which can violate the water quality standards in the receiving water. Concrete spillage or concrete discharge to surface waters of the State is prohibited. Use this BMP to minimize and eliminate process water and slurry created through sawcutting or surfacing from entering waters of the State.
<i>Conditions of Use</i>	Utilize these management practices anytime sawcutting or surfacing operations take place. Sawcutting and surfacing operations include, but are not limited to, the following: <ul style="list-style-type: none">• Sawing• Coring• Grinding• Roughening• Hydro-demolition• Bridge and road surfacing
<i>Design and Installation Specifications</i>	<ul style="list-style-type: none">• Vacuum slurry and cuttings during cutting and surfacing operations.• Slurry and cuttings shall not remain on permanent concrete or asphalt pavement overnight.• Slurry and cuttings shall not drain to any natural or constructed drainage conveyance including stormwater systems. This may require temporarily blocking catch basins.• Dispose of collected slurry and cuttings in a manner that does not violate ground water or surface water quality standards.• Do not allow process water generated during hydro-demolition, surface roughening or similar operations to drain to any natural or constructed drainage conveyance including stormwater systems. Dispose process water in a manner that does not violate ground water or surface water quality standards.• Handle and dispose cleaning waste material and demolition debris in a manner that does not cause contamination of water. Dispose of sweeping material from a pick-up sweeper at an appropriate disposal site.
<i>Maintenance Standards</i>	Continually monitor operations to determine whether slurry, cuttings, or process water could enter waters of the state. If inspections show that a violation of water quality standards could occur, stop operations and immediately implement preventive measures such as berms, barriers, secondary containment, and vacuum trucks.

BMP C153: Material Delivery, Storage and Containment

<i>Purpose</i>	Prevent, reduce, or eliminate the discharge of pollutants to the stormwater system or watercourses from material delivery and storage. Minimize the storage of hazardous materials on-site, store materials in a designated area, and install secondary containment.
<i>Conditions of Use</i>	<p>These procedures are suitable for use at all construction sites with delivery and storage of the following materials:</p> <ul style="list-style-type: none">• Petroleum products such as fuel, oil and grease• Soil stabilizers and binders (e.g. Polyacrylamide)• Fertilizers, pesticides and herbicides• Detergents• Asphalt and concrete compounds• Hazardous chemicals such as acids, lime, adhesives, paints, solvents and curing compounds• Any other material that may be detrimental if released to the environment
<i>Design and Installation Specifications</i>	<p>The following steps should be taken to minimize risk:</p> <ul style="list-style-type: none">• Temporary storage area should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains.• Material Safety Data Sheets (MSDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers.• Hazardous material storage on-site should be minimized.• Hazardous materials should be handled as infrequently as possible.• During the wet weather season (Oct 1 – April 30), consider storing materials in a covered area.• Materials should be stored in secondary containments, such as earthen dike, horse trough, or even a children’s wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in “bus boy” trays or concrete mixing trays.• Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, and within secondary containment.• If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.

Material Storage Areas and Secondary Containment Practices:

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall not be overfilled. Containers and drums shall be stored in temporary secondary containment facilities.
- Temporary secondary containment facilities shall provide for a spill containment volume able to contain 10% of the total enclosed container volume of all containers, or 110% of the capacity of the largest container within its boundary, whichever is greater.
- Secondary containment facilities shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- Secondary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as hazardous waste unless testing determines them to be non-hazardous.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- During the wet weather season (Oct 1 – April 30), each secondary containment facility shall be covered during non-working days, prior to and during rain events.
- Keep material storage areas clean, organized and equipped with an ample supply of appropriate spill clean-up material (spill kit).
- The spill kit should include, at a minimum:
 - 1-Water Resistant Nylon Bag
 - 3-Oil Absorbent Socks 3”x 4’
 - 2-Oil Absorbent Socks 3”x 10’
 - 12-Oil Absorbent Pads 17”x19”
 - 1-Pair Splash Resistant Goggles
 - 3-Pair Nitrile Gloves
 - 10-Disposable Bags with Ties
 - Instructions

BMP C154: Concrete Washout Area

<i>Purpose</i>	Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout off-site, or performing on-site washout in a designated area to prevent pollutants from entering surface waters or ground water.
<i>Conditions of Use</i>	<p>Concrete washout area best management practices are implemented on construction projects where:</p> <ul style="list-style-type: none">• Concrete is used as a construction material• It is not possible to dispose of all concrete wastewater and washout off-site (ready mix plant, etc.).• Concrete trucks, pumpers, or other concrete coated equipment are washed on-site.• Note: If less than 10 concrete trucks or pumpers need to be washed out on-site, the washwater may be disposed of in a formed area awaiting concrete or an upland disposal site where it will not contaminate surface or ground water. The upland disposal site shall be at least 50 feet from sensitive areas such as storm drains, open ditches, or water bodies, including wetlands.
<i>Design and Installation Specifications</i>	<p>Implementation</p> <p>The following steps will help reduce stormwater pollution from concrete wastes:</p> <ul style="list-style-type: none">• Perform washout of concrete trucks off-site or in designated concrete washout areas only.• Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.• Do not allow excess concrete to be dumped on-site, except in designated concrete washout areas.• Concrete washout areas may be prefabricated concrete washout containers, or self-installed structures (above-grade or below-grade).• Prefabricated containers are most resistant to damage and protect against spills and leaks. Companies may offer delivery service and provide regular maintenance and disposal of solid and liquid waste.• If self-installed concrete washout areas are used, below-grade structures are preferred over above-grade structures because they are less prone to spills and leaks.• Self-installed above-grade structures should only be used if excavation is not practical.

Education

- Discuss the concrete management techniques described in this BMP with the ready-mix concrete supplier before any deliveries are made.
- Educate employees and subcontractors on the concrete waste management techniques described in this BMP.
- Arrange for contractor's superintendent or Certified Erosion and Sediment Control Lead (CESCL) to oversee and enforce concrete waste management procedures.
- A sign should be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

Contracts

Incorporate requirements for concrete waste management into concrete supplier and subcontractor agreements.

Location and Placement

- Locate washout area at least 50 feet from sensitive areas such as storm drains, open ditches, or water bodies, including wetlands.
- Allow convenient access for concrete trucks, preferably near the area where the concrete is being poured.
- If trucks need to leave a paved area to access washout, prevent track-out with a pad of rock or quarry spalls (see [BMP C105](#)). These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills.
- The number of facilities you install should depend on the expected demand for storage capacity.
- On large sites with extensive concrete work, washouts should be placed in multiple locations for ease of use by concrete truck drivers.

On-site Temporary Concrete Washout Facility, Transit Truck Washout Procedures:

- Temporary concrete washout facilities shall be located a minimum of 50 ft from sensitive areas including storm drain inlets, open drainage facilities, and watercourses. See [Figures 4.1.7](#) and [4.1.8](#).
- Concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Approximately 7 gallons of wash water are used to wash one truck chute.
- Approximately 50 gallons are used to wash out the hopper of a concrete pump truck.

- Washout of concrete trucks shall be performed in designated areas only.
- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of off-site.
- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per applicable solid waste regulations. Dispose of hardened concrete on a regular basis.
- Temporary Above-Grade Concrete Washout Facility
 - Temporary concrete washout facility (type above grade) should be constructed as shown on the details below, with a recommended minimum length and minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.
 - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
- Temporary Below-Grade Concrete Washout Facility
 - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details below, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.
 - Lath and flagging should be commercial type.
 - Plastic lining material shall be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.
 - Liner seams shall be installed in accordance with manufacturers' recommendations.
 - Soil base shall be prepared free of rocks or other debris that may cause tears or holes in the plastic lining material.

Maintenance Standards

Inspection and Maintenance

- Inspect and verify that concrete washout BMPs are in place prior to the commencement of concrete work.
- During periods of concrete work, inspect daily to verify continued performance.
 - Check overall condition and performance.
 - Check remaining capacity (% full).

- If using self-installed washout facilities, verify plastic liners are intact and sidewalls are not damaged.
- If using prefabricated containers, check for leaks.
- Washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 12 inches.
- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- If the washout is nearing capacity, vacuum and dispose of the waste material in an approved manner.
 - Do not discharge liquid or slurry to waterways, storm drains or directly onto ground.
 - Do not use sanitary sewer without local approval.
 - Place a secure, non-collapsing, non-water collecting cover over the concrete washout facility prior to predicted wet weather to prevent accumulation and overflow of precipitation.
 - Remove and dispose of hardened concrete and return the structure to a functional condition. Concrete may be reused on-site or hauled away for disposal or recycling.
- When you remove materials from the self-installed concrete washout, build a new structure; or, if the previous structure is still intact, inspect for signs of weakening or damage, and make any necessary repairs. Re-line the structure with new plastic after each cleaning.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete, slurries and liquids shall be removed and properly disposed of.
- Materials used to construct temporary concrete washout facilities shall be removed from the site of the work and disposed of or recycled.
- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled, repaired, and stabilized to prevent erosion.

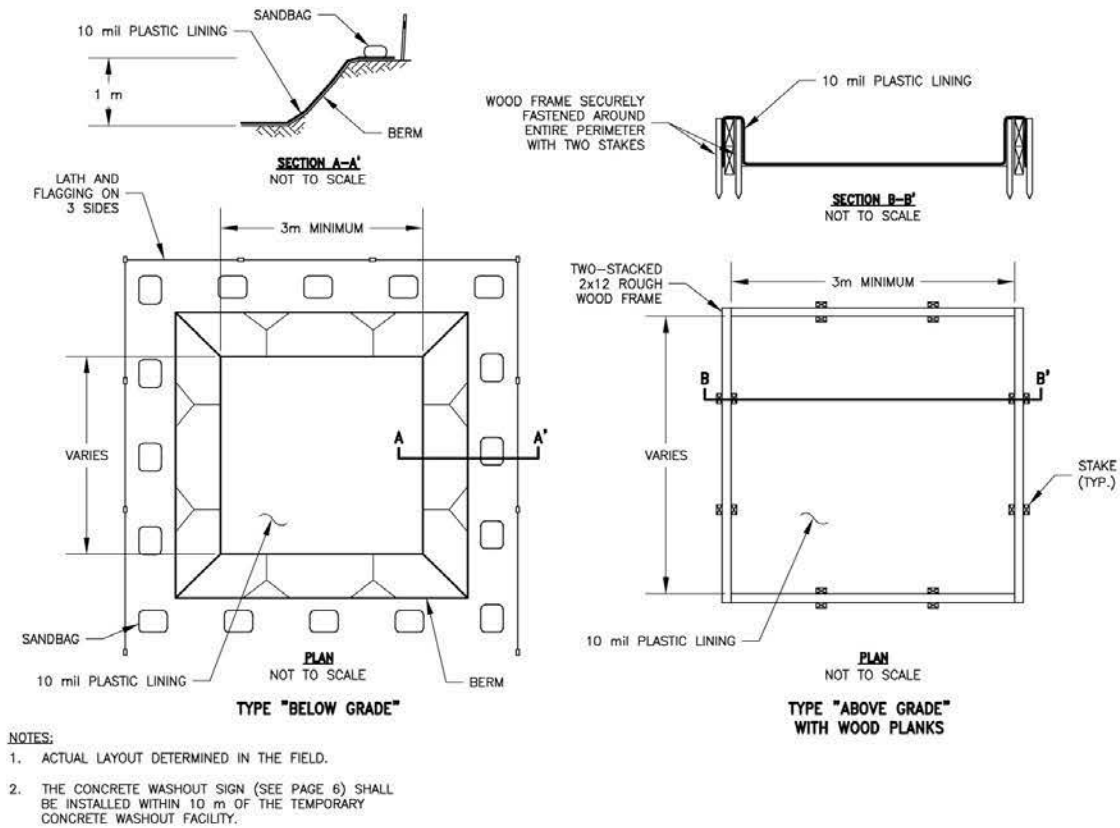
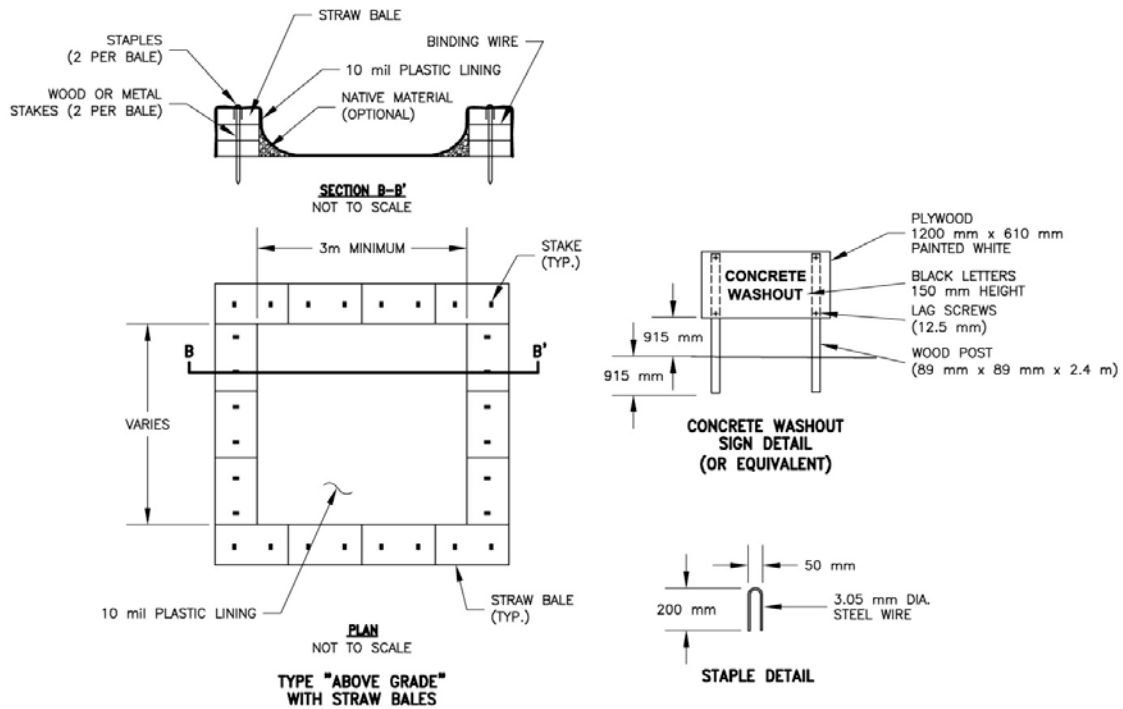


Figure 4.1.7a – Concrete Washout Area



NOTES:

1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. THE CONCRETE WASHOUT SIGN (SEE FIG. 4-15) SHALL BE INSTALLED WITHIN 10 m OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

CALTRANS/FIG4-14.DWG SAC 8-14-02

Figure 4.1.7b – Concrete Washout Area

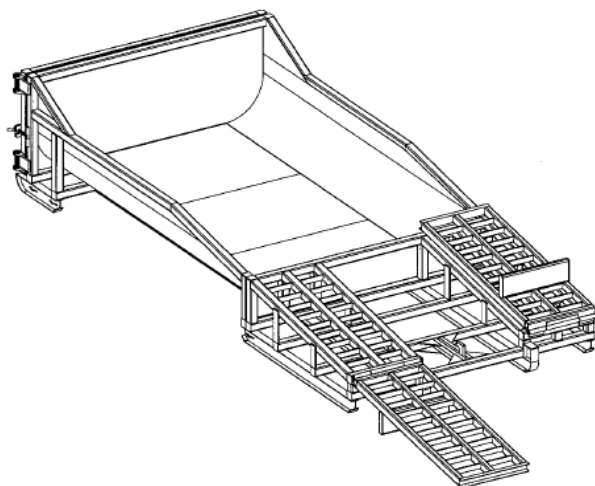


Figure 4.1.8 – Prefabricated Concrete Washout Container w/Ramp

BMP C160: Certified Erosion and Sediment Control Lead

Purpose

The project proponent designates at least one person as the responsible representative in charge of erosion and sediment control (ESC), and water quality protection. The designated person shall be the Certified Erosion and Sediment Control Lead (CESCL) who is responsible for ensuring compliance with all local, state, and federal erosion and sediment control and water quality requirements.

Conditions of Use

A CESCL shall be made available on projects one acre or larger that discharge stormwater to surface waters of the state. Sites less than one acre may have a person without CESCL certification conduct inspections; sampling is not required on sites that disturb less than an acre.

- The CESCL shall:
 - Have a current certificate proving attendance in an erosion and sediment control training course that meets the minimum ESC training and certification requirements established by Ecology (see details below).

Ecology will maintain a list of ESC training and certification providers at:

<http://www.ecy.wa.gov/programs/wq/stormwater/cescl.html>

OR

- Be a Certified Professional in Erosion and Sediment Control (CPESC); for additional information go to: www.cpesc.net

Specifications

- Certification shall remain valid for three years.
- The CESCL shall have authority to act on behalf of the contractor or developer and shall be available, or on-call, 24 hours per day throughout the period of construction.
- The Construction SWPPP shall include the name, telephone number, fax number, and address of the designated CESCL.
- A CESCL may provide inspection and compliance services for multiple construction projects in the same geographic region.

Duties and responsibilities of the CESCL shall include, but are not limited to the following:

- Maintaining permit file on site at all times which includes the Construction SWPPP and any associated permits and plans.
- Directing BMP installation, inspection, maintenance, modification, and removal.

- Updating all project drawings and the Construction SWPPP with changes made.
- Completing any sampling requirements including reporting results using WebDMR.
- Keeping daily logs, and inspection reports. Inspection reports should include:
 - Inspection date/time.
 - Weather information; general conditions during inspection and approximate amount of precipitation since the last inspection.
 - A summary or list of all BMPs implemented, including observations of all erosion/sediment control structures or practices. The following shall be noted:
 1. Locations of BMPs inspected.
 2. Locations of BMPs that need maintenance.
 3. Locations of BMPs that failed to operate as designed or intended.
 4. Locations of where additional or different BMPs are required.
 - Visual monitoring results, including a description of discharged stormwater. The presence of suspended sediment, turbid water, discoloration, and oil sheen shall be noted, as applicable.
 - Any water quality monitoring performed during inspection.
 - General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.
- Facilitate, participate in, and take corrective actions resulting from inspections performed by outside agencies or the owner.

BMP C220: Storm Drain Inlet Protection

Purpose Storm drain inlet protection prevents coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.

Conditions of Use Use storm drain inlet protection at inlets that are operational before permanent stabilization of the disturbed drainage area. Provide protection for all storm drain inlets downslope and within 500 feet of a disturbed or construction area, unless conveying runoff entering catch basins to a sediment pond or trap.

Also consider inlet protection for lawn and yard drains on new home construction. These small and numerous drains coupled with lack of gutters in new home construction can add significant amounts of sediment into the roof drain system. If possible delay installing lawn and yard drains until just before landscaping or cap these drains to prevent sediment from entering the system until completion of landscaping. Provide 18-inches of sod around each finished lawn and yard drain.

[Table 4.2.2](#) lists several options for inlet protection. All of the methods for storm drain inlet protection tend to plug and require a high frequency of maintenance. Limit drainage areas to one acre or less. Possibly provide emergency overflows with additional end-of-pipe treatment where stormwater ponding would cause a hazard.

Table 4.2.2 Storm Drain Inlet Protection			
Type of Inlet Protection	Emergency Overflow	Applicable for Paved/ Earthen Surfaces	Conditions of Use
Drop Inlet Protection			
Excavated drop inlet protection	Yes, temporary flooding will occur	Earthen	Applicable for heavy flows. Easy to maintain. Large area Requirement: 30' X 30'/acre
Block and gravel drop inlet protection	Yes	Paved or Earthen	Applicable for heavy concentrated flows. Will not pond.
Gravel and wire drop inlet protection	No		Applicable for heavy concentrated flows. Will pond. Can withstand traffic.
Catch basin filters	Yes	Paved or Earthen	Frequent maintenance required.
Curb Inlet Protection			
Curb inlet protection with a wooden weir	Small capacity overflow	Paved	Used for sturdy, more compact installation.
Block and gravel curb inlet protection	Yes	Paved	Sturdy, but limited filtration.
Culvert Inlet Protection			
Culvert inlet sediment trap			18 month expected life.

Design and Installation Specifications

Excavated Drop Inlet Protection - An excavated impoundment around the storm drain. Sediment settles out of the stormwater prior to entering the storm drain.

- Provide a depth of 1-2 ft as measured from the crest of the inlet structure.
- Slope sides of excavation no steeper than 2H:1V.
- Minimum volume of excavation 35 cubic yards.
- Shape basin to fit site with longest dimension oriented toward the longest inflow area.
- Install provisions for draining to prevent standing water problems.
- Clear the area of all debris.
- Grade the approach to the inlet uniformly.
- Drill weep holes into the side of the inlet.
- Protect weep holes with screen wire and washed aggregate.
- Seal weep holes when removing structure and stabilizing area.

- Build a temporary dike, if necessary, to the down slope side of the structure to prevent bypass flow.

Block and Gravel Filter - A barrier formed around the storm drain inlet with standard concrete blocks and gravel. See [Figure 4.2.8](#).

- Provide a height of 1 to 2 feet above inlet.
- Recess the first row 2-inches into the ground for stability.
- Support subsequent courses by placing a 2x4 through the block opening.
- Do not use mortar.
- Lay some blocks in the bottom row on their side for dewatering the pool.
- Place hardware cloth or comparable wire mesh with ½-inch openings over all block openings.
- Place gravel just below the top of blocks on slopes of 2H:1V or flatter.
- An alternative design is a gravel donut.
- Provide an inlet slope of 3H:1V.
- Provide an outlet slope of 2H:1V.
- Provide a 1-foot wide level stone area between the structure and the inlet.
- Use inlet slope stones 3 inches in diameter or larger.
- Use gravel ½- to ¾-inch at a minimum thickness of 1-foot for the outlet slope.

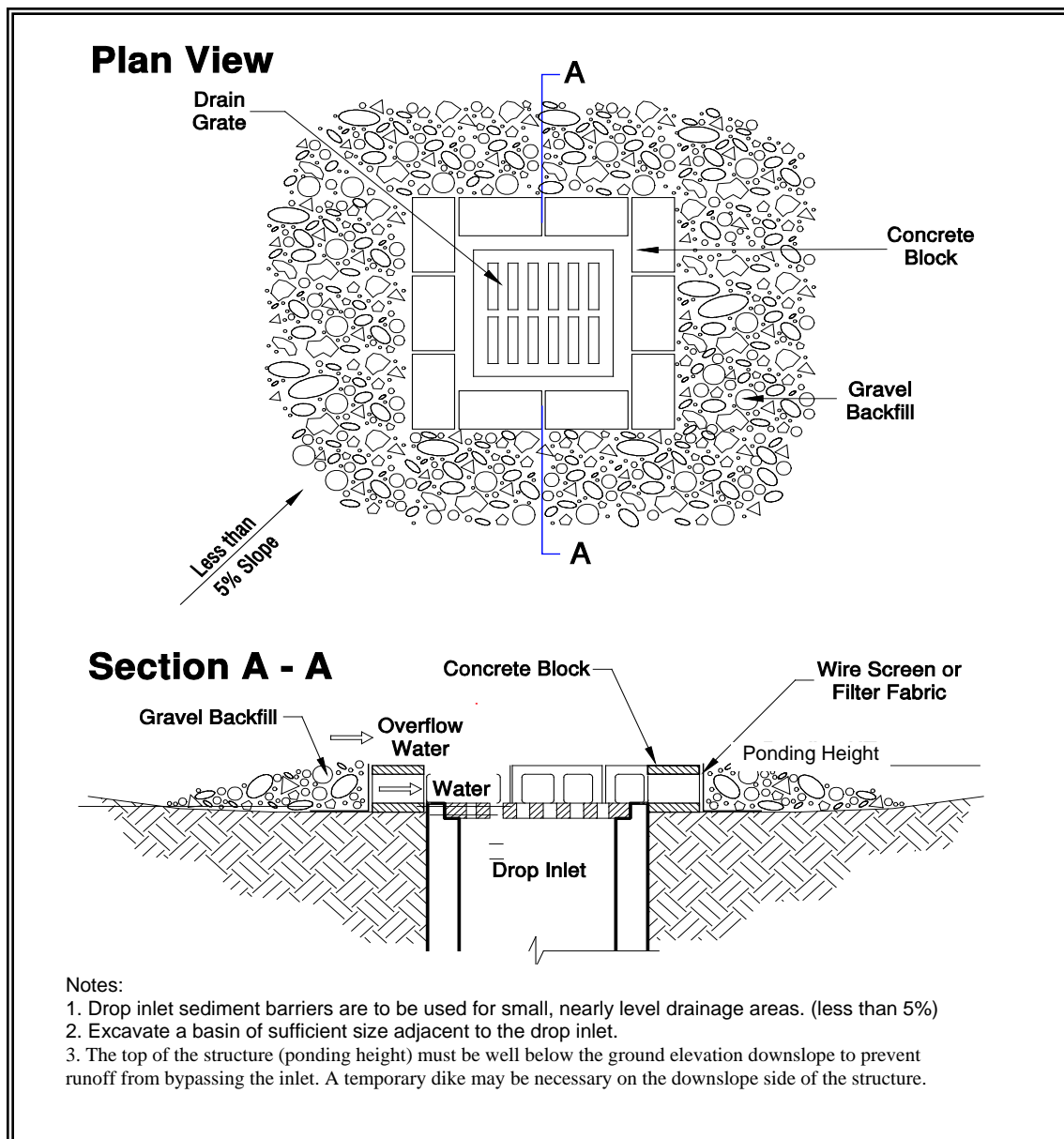


Figure 4.2.8 – Block and Gravel Filter

Gravel and Wire Mesh Filter - A gravel barrier placed over the top of the inlet. This structure does not provide an overflow.

- Use a hardware cloth or comparable wire mesh with ½-inch openings.
- Use coarse aggregate.
- Provide a height 1-foot or more, 18-inches wider than inlet on all sides.
- Place wire mesh over the drop inlet so that the wire extends a minimum of 1-foot beyond each side of the inlet structure.
- Overlap the strips if more than one strip of mesh is necessary.

- Place coarse aggregate over the wire mesh.
- Provide at least a 12-inch depth of gravel over the entire inlet opening and extend at least 18-inches on all sides.

Catchbasin Filters – Use inserts designed by manufacturers for construction sites. The limited sediment storage capacity increases the amount of inspection and maintenance required, which may be daily for heavy sediment loads. To reduce maintenance requirements combine a catchbasin filter with another type of inlet protection. This type of inlet protection provides flow bypass without overflow and therefore may be a better method for inlets located along active rights-of-way.

- Provides 5 cubic feet of storage.
- Requires dewatering provisions.
- Provides a high-flow bypass that will not clog under normal use at a construction site.
- Insert the catchbasin filter in the catchbasin just below the grating.

Curb Inlet Protection with Wooden Weir – Barrier formed around a curb inlet with a wooden frame and gravel.

- Use wire mesh with ½-inch openings.
- Use extra strength filter cloth.
- Construct a frame.
- Attach the wire and filter fabric to the frame.
- Pile coarse washed aggregate against wire/fabric.
- Place weight on frame anchors.

Block and Gravel Curb Inlet Protection – Barrier formed around a curb inlet with concrete blocks and gravel. See [Figure 4.2.9](#).

- Use wire mesh with ½-inch openings.
- Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are spacer blocks.
- Place a 2x4 stud through the outer holes of each spacer block to align the front blocks.
- Place blocks on their sides across the front of the inlet and abutting the spacer blocks.
- Place wire mesh over the outside vertical face.
- Pile coarse aggregate against the wire to the top of the barrier.

Curb and Gutter Sediment Barrier – Sandbag or rock berm (riprap and aggregate) 3 feet high and 3 feet wide in a horseshoe shape. See [Figure 4.2.10](#).

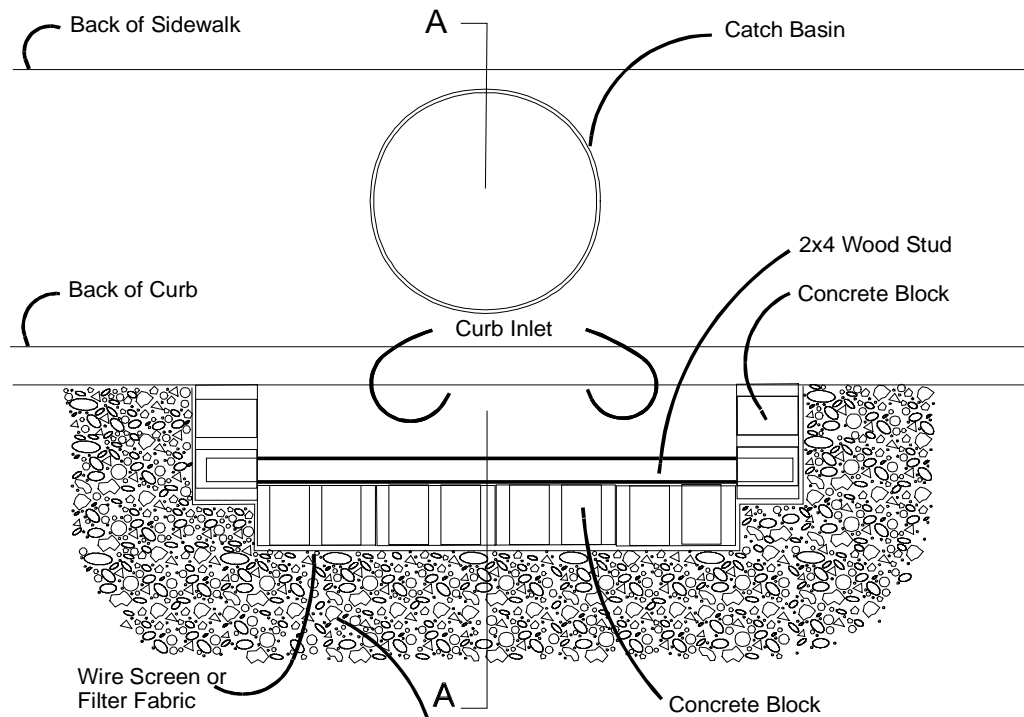
***Maintenance
Standards***

- Construct a horseshoe shaped berm, faced with coarse aggregate if using riprap, 3 feet high and 3 feet wide, at least 2 feet from the inlet.
- Construct a horseshoe shaped sedimentation trap on the outside of the berm sized to sediment trap standards for protecting a culvert inlet.
- Inspect catch basin filters frequently, especially after storm events. Clean and replace clogged inserts. For systems with clogged stone filters: pull away the stones from the inlet and clean or replace. An alternative approach would be to use the clogged stone as fill and put fresh stone around the inlet.
- Do not wash sediment into storm drains while cleaning. Spread all excavated material evenly over the surrounding land area or stockpile and stabilize as appropriate.

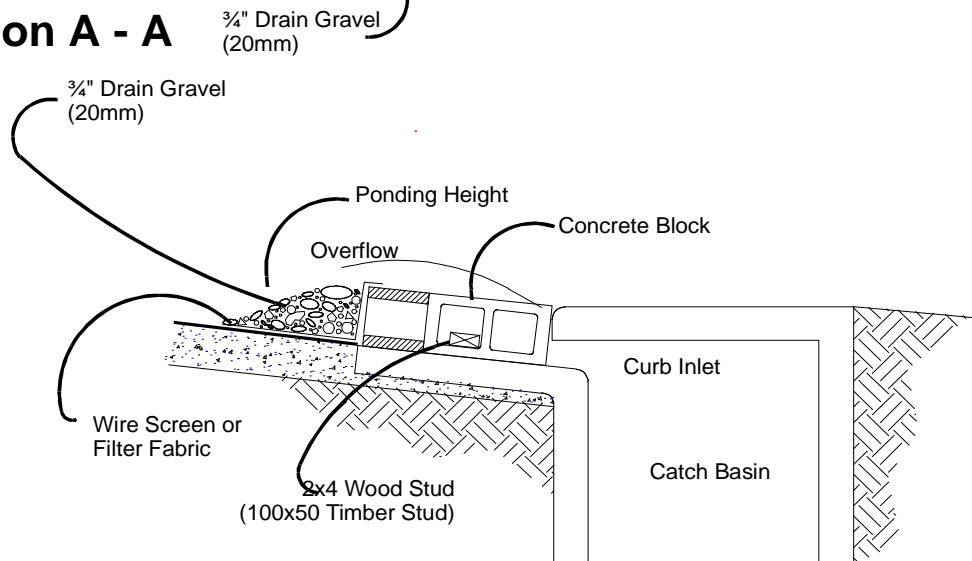
***Approved as
Equivalent***

Ecology has approved products as able to meet the requirements of [BMP C220](#). The products did not pass through the Technology Assessment Protocol – Ecology (TAPE) process. Local jurisdictions may choose not to accept this product approved as equivalent, or may require additional testing prior to consideration for local use. The products are available for review on Ecology’s website at <http://www.ecy.wa.gov/programs/wq/stormwater/newtech/equivalent.html>

Plan View



Section A - A

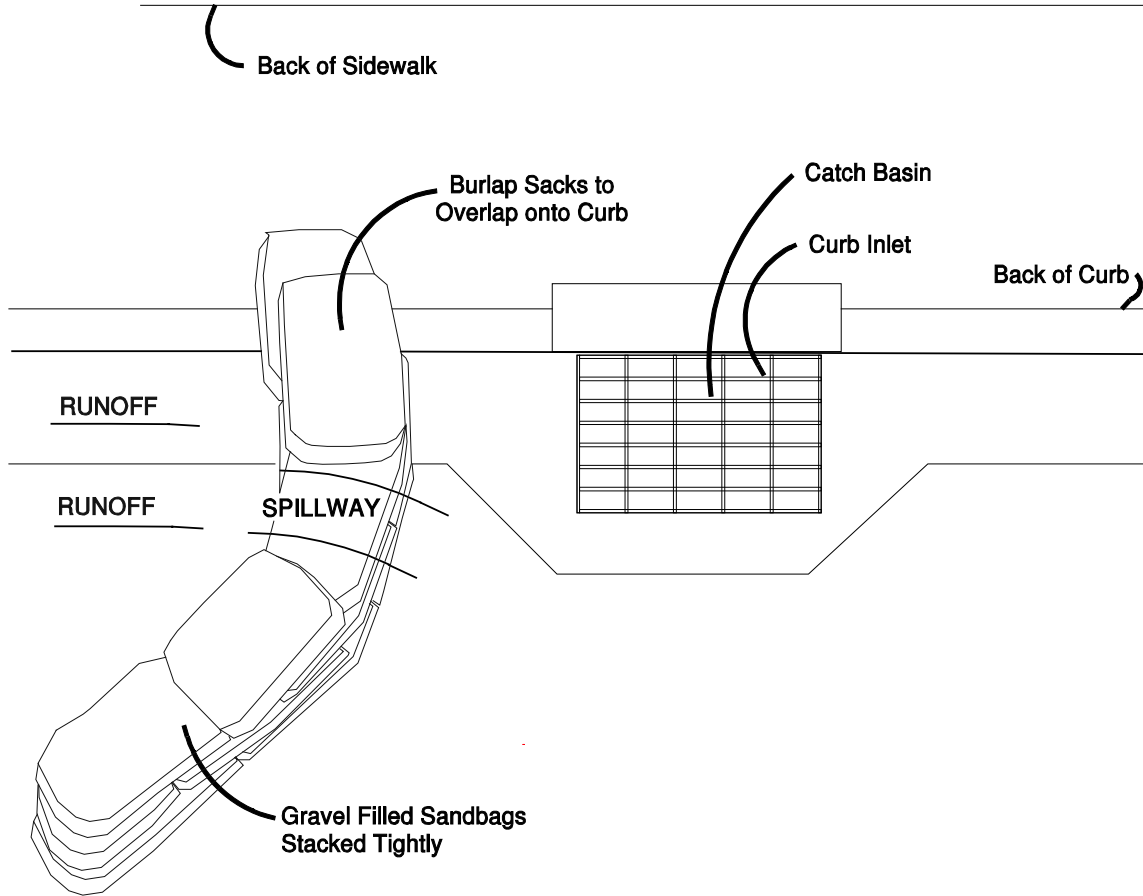


NOTES:

1. Use block and gravel type sediment barrier when curb inlet is located in gently sloping street segment, where water can pond and allow sediment to separate from runoff.
2. Barrier shall allow for overflow from severe storm event.
3. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

Figure 4.2.9 – Block and Gravel Curb Inlet Protection

Plan View



NOTES:

1. Place curb type sediment barriers on gently sloping street segments, where water can pond and allow sediment to separate from runoff.
2. Sandbags of either burlap or woven 'geotextile' fabric, are filled with gravel, layered and packed tightly.
3. Leave a one sandbag gap in the top row to provide a spillway for overflow.
4. Inspect barriers and remove sediment after each storm event. Sediment and gravel must be removed from the traveled way immediately.

Figure 4.2.10 – Curb and Gutter Barrier

BMP C233: Silt Fence

- Purpose*** Use of a silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow. See [Figure 4.2.12](#) for details on silt fence construction.
- Conditions of Use*** Silt fence may be used downslope of all disturbed areas.
- Silt fence shall prevent soil carried by runoff water from going beneath, through, or over the top of the silt fence, but shall allow the water to pass through the fence.
 - Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Convey any concentrated flows through the drainage system to a sediment pond.
 - Do not construct silt fences in streams or use in V-shaped ditches. Silt fences do not provide an adequate method of silt control for anything deeper than sheet or overland flow.

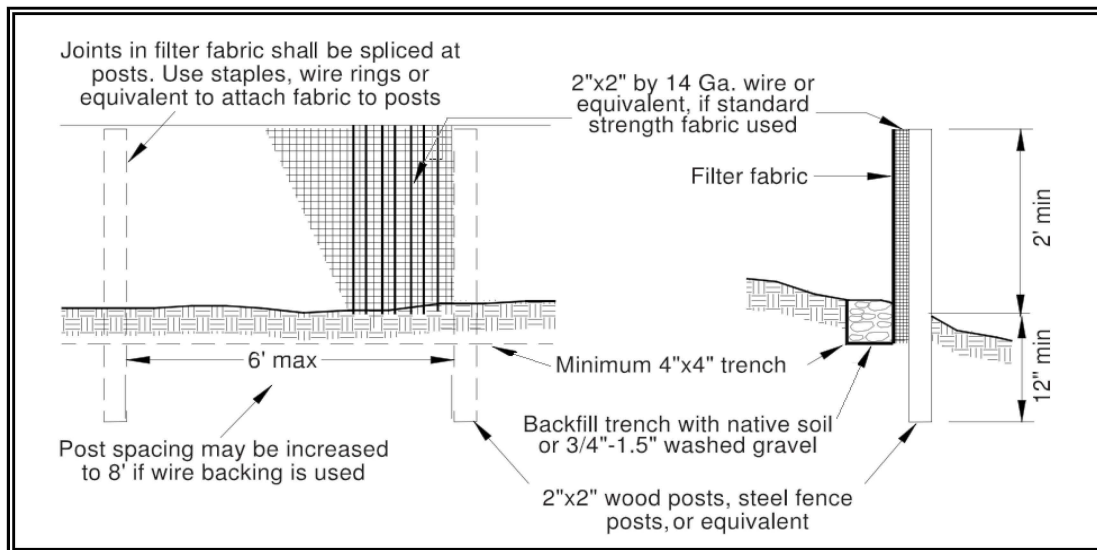


Figure 4.2.12 – Silt Fence

***Design and
Installation
Specifications***

- Use in combination with sediment basins or other BMPs.
- Maximum slope steepness (normal (perpendicular) to fence line) 1H:1V.
- Maximum sheet or overland flow path length to the fence of 100 feet.
- Do not allow flows greater than 0.5 cfs.
- The geotextile used shall meet the following standards. All geotextile properties listed below are minimum average roll values (i.e., the test result for any sampled roll in a lot shall meet or exceed the values shown in [Table 4.2.3](#)):

Table 4.2.3 Geotextile Standards	
Polymeric Mesh AOS (ASTM D4751)	0.60 mm maximum for slit film woven (#30 sieve). 0.30 mm maximum for all other geotextile types (#50 sieve). 0.15 mm minimum for all fabric types (#100 sieve).
Water Permittivity (ASTM D4491)	0.02 sec ⁻¹ minimum
Grab Tensile Strength (ASTM D4632)	180 lbs. Minimum for extra strength fabric. 100 lbs minimum for standard strength fabric.
Grab Tensile Strength (ASTM D4632)	30% maximum
Ultraviolet Resistance (ASTM D4355)	70% minimum

- Support standard strength fabrics with wire mesh, chicken wire, 2-inch x 2-inch wire, safety fence, or jute mesh to increase the strength of the

fabric. Silt fence materials are available that have synthetic mesh backing attached.

- Filter fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0°F. to 120°F.
- One-hundred percent biodegradable silt fence is available that is strong, long lasting, and can be left in place after the project is completed, if permitted by local regulations.
- Refer to [Figure 4.2.12](#) for standard silt fence details. Include the following standard Notes for silt fence on construction plans and specifications:
 1. The contractor shall install and maintain temporary silt fences at the locations shown in the Plans.
 2. Construct silt fences in areas of clearing, grading, or drainage prior to starting those activities.
 3. The silt fence shall have a 2-feet min. and a 2½-feet max. height above the original ground surface.
 4. The filter fabric shall be sewn together at the point of manufacture to form filter fabric lengths as required. Locate all sewn seams at support posts. Alternatively, two sections of silt fence can be overlapped, provided the Contractor can demonstrate, to the satisfaction of the Engineer, that the overlap is long enough and that the adjacent fence sections are close enough together to prevent silt laden water from escaping through the fence at the overlap.
 5. Attach the filter fabric on the up-slope side of the posts and secure with staples, wire, or in accordance with the manufacturer's recommendations. Attach the filter fabric to the posts in a manner that reduces the potential for tearing.
 6. Support the filter fabric with wire or plastic mesh, dependent on the properties of the geotextile selected for use. If wire or plastic mesh is used, fasten the mesh securely to the up-slope side of the posts with the filter fabric up-slope of the mesh.
 7. Mesh support, if used, shall consist of steel wire with a maximum mesh spacing of 2-inches, or a prefabricated polymeric mesh. The strength of the wire or polymeric mesh shall be equivalent to or greater than 180 lbs. grab tensile strength. The polymeric mesh must be as resistant to the same level of ultraviolet radiation as the filter fabric it supports.
 8. Bury the bottom of the filter fabric 4-inches min. below the ground surface. Backfill and tamp soil in place over the buried portion of the filter fabric, so that no flow can pass beneath the fence and

scouring cannot occur. When wire or polymeric back-up support mesh is used, the wire or polymeric mesh shall extend into the ground 3-inches min.

9. Drive or place the fence posts into the ground 18-inches min. A 12-inch min. depth is allowed if topsoil or other soft subgrade soil is not present and 18-inches cannot be reached. Increase fence post min. depths by 6 inches if the fence is located on slopes of 3H:1V or steeper and the slope is perpendicular to the fence. If required post depths cannot be obtained, the posts shall be adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.
 10. Use wood, steel or equivalent posts. The spacing of the support posts shall be a maximum of 6-feet. Posts shall consist of either:
 - Wood with dimensions of 2-inches by 2-inches wide min. and a 3-feet min. length. Wood posts shall be free of defects such as knots, splits, or gouges.
 - No. 6 steel rebar or larger.
 - ASTM A 120 steel pipe with a minimum diameter of 1-inch.
 - U, T, L, or C shape steel posts with a minimum weight of 1.35 lbs./ft.
 - Other steel posts having equivalent strength and bending resistance to the post sizes listed above.
 11. Locate silt fences on contour as much as possible, except at the ends of the fence, where the fence shall be turned uphill such that the silt fence captures the runoff water and prevents water from flowing around the end of the fence.
 12. If the fence must cross contours, with the exception of the ends of the fence, place gravel check dams perpendicular to the back of the fence to minimize concentrated flow and erosion. The slope of the fence line where contours must be crossed shall not be steeper than 3H:1V.
 - Gravel check dams shall be approximately 1-foot deep at the back of the fence. Gravel check dams shall be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence.
 - Gravel check dams shall consist of crushed surfacing base course, gravel backfill for walls, or shoulder ballast. Gravel check dams shall be located every 10 feet along the fence where the fence must cross contours.
- Refer to [Figure 4.2.13](#) for slicing method details. Silt fence installation using the slicing method specifications:

1. The base of both end posts must be at least 2- to 4-inches above the top of the filter fabric on the middle posts for ditch checks to drain properly. Use a hand level or string level, if necessary, to mark base points before installation.
2. Install posts 3- to 4-feet apart in critical retention areas and 6- to 7-feet apart in standard applications.
3. Install posts 24-inches deep on the downstream side of the silt fence, and as close as possible to the filter fabric, enabling posts to support the filter fabric from upstream water pressure.
4. Install posts with the nipples facing away from the filter fabric.
5. Attach the filter fabric to each post with three ties, all spaced within the top 8-inches of the filter fabric. Attach each tie diagonally 45 degrees through the filter fabric, with each puncture at least 1-inch vertically apart. Each tie should be positioned to hang on a post nipple when tightening to prevent sagging.
6. Wrap approximately 6-inches of fabric around the end posts and secure with 3 ties.
7. No more than 24-inches of a 36-inch filter fabric is allowed above ground level.

Compact the soil immediately next to the filter fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first and then each side twice for a total of four trips. Check and correct the silt fence installation for any deviation before compaction. Use a flat-bladed shovel to tuck fabric deeper into the ground if necessary.

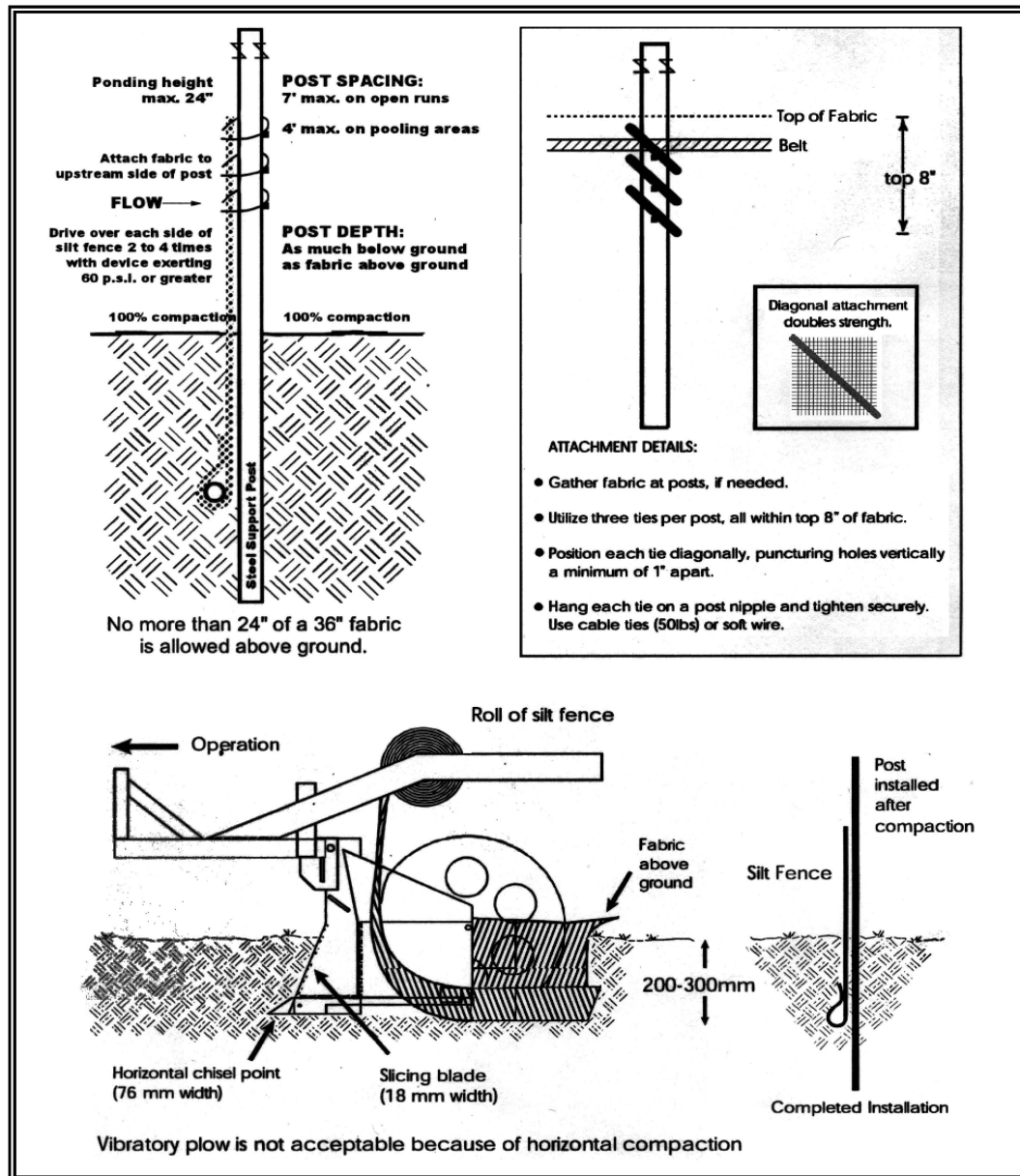


Figure 4.2.13 – Silt Fence Installation by Slicing Method

Maintenance Standards

- Repair any damage immediately.
- Intercept and convey all evident concentrated flows uphill of the silt fence to a sediment pond.
- Check the uphill side of the fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence or remove the trapped sediment.

- Remove sediment deposits when the deposit reaches approximately one-third the height of the silt fence, or install a second silt fence.
- Replace filter fabric that has deteriorated due to ultraviolet breakdown.

BMP C251: Construction Stormwater Filtration

Purpose

Filtration removes sediment from runoff originating from disturbed areas of the site.

Background Information:

Filtration with sand media has been used for over a century to treat water and wastewater. The use of sand filtration for treatment of stormwater has developed recently, generally to treat runoff from streets, parking lots, and residential areas. The application of filtration to construction stormwater treatment is currently under development.

Conditions of Use

Traditional BMPs used to control soil erosion and sediment loss from sites under development may not be adequate to ensure compliance with the water quality standard for turbidity in the receiving water. Filtration may be used in conjunction with gravity settling to remove sediment as small as fine silt (0.5 µm). The reduction in turbidity will be dependent on the particle size distribution of the sediment in the stormwater. In some circumstances, sedimentation and filtration may achieve compliance with the water quality standard for turbidity.

The use of construction stormwater filtration does not require approval from Ecology as long as treatment chemicals are not used. Filtration in conjunction with polymer treatment requires testing under the Chemical Technology Assessment Protocol – Ecology (CTAPE) before it can be initiated. Approval from the appropriate regional Ecology office must be obtained at each site where polymers use is proposed prior to use. For more guidance on stormwater chemical treatment see [BMP C250](#).

Design and Installation Specifications

Two types of filtration systems may be applied to construction stormwater treatment: rapid and slow. Rapid sand filters are the typical system used for water and wastewater treatment. They can achieve relatively high hydraulic flow rates, on the order of 2 to 20 gpm/sf, because they have automatic backwash systems to remove accumulated solids. In contrast, slow sand filters have very low hydraulic rates, on the order of 0.02 gpm/sf, because they do not have backwash systems. Slow sand filtration has generally been used to treat stormwater. Slow sand filtration is mechanically simple in comparison to rapid sand filtration but requires a much larger filter area.

Filtration Equipment. Sand media filters are available with automatic backwashing features that can filter to 50 μm particle size. Screen or bag filters can filter down to 5 μm . Fiber wound filters can remove particles down to 0.5 μm . Filters should be sequenced from the largest to the smallest pore opening. Sediment removal efficiency will be related to particle size distribution in the stormwater.

Treatment Process Description. Stormwater is collected at interception point(s) on the site and is diverted to an untreated stormwater sediment pond or tank for removal of large sediment and storage of the stormwater before it is treated by the filtration system. The untreated stormwater is pumped from the trap, pond, or tank through the filtration system in a rapid sand filtration system. Slow sand filtration systems are designed as flow through systems using gravity.

Maintenance Standards

Rapid sand filters typically have automatic backwash systems that are triggered by a pre-set pressure drop across the filter. If the backwash water volume is not large or substantially more turbid than the untreated stormwater stored in the holding pond or tank, backwash return to the untreated stormwater pond or tank may be appropriate. However, other means of treatment and disposal may be necessary.

- Screen, bag, and fiber filters must be cleaned and/or replaced when they become clogged.
- Sediment shall be removed from the storage and/or treatment ponds as necessary. Typically, sediment removal is required once or twice during a wet season and at the decommissioning of the ponds.

Sizing Criteria for Flow-Through Treatment Systems for Flow Control Exempt Water Bodies:

When sizing storage ponds or tanks for flow-through systems for flow control exempt water bodies the treatment system capacity should be a factor. The untreated stormwater storage pond or tank should be sized to hold 1.5 times the runoff volume of the 10-year, 24-hour storm event minus the treatment system flowrate for an 8-hour period. For a chitosan-enhanced sand filtration system, the treatment system flowrate should be sized using a hydraulic loading rate between 6-8 gpm/ft². Other hydraulic

loading rates may be more appropriate for other systems. Bypass should be provided around the chemical treatment system to accommodate extreme storms. Runoff volume shall be calculated using the methods presented in Volume 3, Chapter 2. Worst-case conditions (i.e., producing the most runoff) should be used for analyses (most likely conditions present prior to final landscaping).

Sizing Criteria for Flow Control Water Bodies:

Sites that must implement flow control for the developed site condition must also control stormwater release rates during construction. Construction site stormwater discharges shall not exceed the discharge durations of the pre-developed condition for the range of pre-developed discharge rates from 1/2 of the 2-year flow through the 10-year flow as predicted by an approved continuous runoff model. The pre-developed condition to be matched shall be the land cover condition immediately prior to the development project. This restriction on release rates can affect the size of the storage pond, the filtration system, and the flow rate through the filter system.

The following is how WWHM can be used to determine the release rates from the filtration systems:

1. Determine the pre-developed flow durations to be matched by entering the land use area under the “Pre-developed” scenario in WWHM. The default flow range is from 1/2 of the 2-year flow through the 10-year flow.
2. Enter the post developed land use area in the “Developed Unmitigated” scenario in WWHM.
3. Copy the land use information from the “Developed Unmitigated” to “Developed Mitigated” scenario.
4. There are two possible ways to model stormwater filtration systems:
 - a. The stormwater filtration system uses an untreated stormwater storage pond/tank and the discharge from this pond/tank is pumped to one or more filters. In-line filtration chemicals would be added to the flow right after the pond/tank and before the filter(s). Because the discharge is pumped, WWHM can't generate a stage/storage /discharge (SSD) table for this system. This system is modeled the same way as described in [BMP C250](#) and is as follows:

While in the “Developed Mitigated” scenario, add a pond element under the basin element containing the post-developed land use areas. This pond element represents information on the available untreated stormwater storage and discharge from the filtration system. In cases where the discharge from the filtration system is controlled by a pump, a stage/storage/discharge (SSD) table representing the pond must be generated outside WWHM and

imported into WWHM. WWHM can route the runoff from the post-developed condition through this SSD table (the pond) and determine compliance with the flow duration standard. This would be an iterative design procedure where if the initial SSD table proved to be out of compliance, the designer would have to modify the SSD table outside WWHM and re-import in WWHM and route the runoff through it again. The iteration will continue until a pond that enables compliance with the flow duration standard is designed.

Notes on SSD table characteristics:

- The pump discharge rate would likely be initially set at just below $\frac{1}{2}$ of the 2-year flow from the pre-developed condition. As runoff coming into the untreated stormwater storage pond increases and the available untreated stormwater storage volume gets used up, it would be necessary to increase the pump discharge rate above $\frac{1}{2}$ of the 2-year. The increase(s) above $\frac{1}{2}$ of the 2-year must be such that they provide some relief to the untreated stormwater storage needs but at the same time they will not cause violations of the flow duration standard at the higher flows. The final design SSD table will identify the appropriate pumping rates and the corresponding stage and storages.
 - When building such a flow control system, the design must ensure that any automatic adjustments to the pumping rates will be as a result of changes to the available storage in accordance with the final design SSD table.
- b. The stormwater filtration system uses a storage pond/tank and the discharge from this pond/tank gravity flows to the filter. This is usually a slow sand filter system and it is possible to model it in WWHM as a Filter element or as a combination of Pond and Filter element placed in series. The stage/storage/discharge table(s) may then be generated within WWHM as follows:
- (i) While in the “Developed Mitigated” scenario, add a Filter element under the basin element containing the post-developed land use areas. The length and width of this filter element would have to be the same as the bottom length and width of the upstream untreated stormwater storage pond/tank.
 - (ii) In cases where the length and width of the filter is not the same as those for the bottom of the upstream untreated stormwater storage tank/pond, the treatment system may be modeled as a Pond element followed by a Filter element. By having these two elements, WWHM would then generate a SSD table for the storage pond which then gravity flows to the Filter element. The Filter element downstream of the untreated stormwater

storage pond would have a storage component through the media, and an overflow component for when the filtration capacity is exceeded.

WWHM can route the runoff from the post-developed condition through the treatment systems in 4b and determine compliance with the flow duration standard. This would be an iterative design procedure where if the initial sizing estimates for the treatment system proved to be inadequate, the designer would have to modify the system and route the runoff through it again. The iteration would continue until compliance with the flow duration standard is achieved.

5. It should be noted that the above procedures would be used to meet the flow control requirements. The filtration system must be able to meet the runoff treatment requirements. It is likely that the discharge flow rate of $\frac{1}{2}$ of the 2-year or more may exceed the treatment capacity of the system. If that is the case, the untreated stormwater discharge rate(s) (i.e., influent to the treatment system) must be reduced to allow proper treatment. Any reduction in the flows would likely result in the need for a larger untreated stormwater storage volume.

If system design does not allow you to discharge at the slower rates as described above and if the site has a retention or detention pond that will serve the planned development, the discharge from the treatment system may be directed to the permanent retention/detention pond to comply with the flow control requirements. In this case, the untreated stormwater storage pond and treatment system will be sized according to the sizing criteria for flow-through treatment systems for flow control exempt waterbodies described earlier except all discharges (water passing through the treatment system and stormwater bypassing the treatment system) will be directed into the permanent retention/detention pond. If site constraints make locating the untreated stormwater storage pond difficult, the permanent retention/detention pond may be divided to serve as the untreated stormwater discharge pond and the post-treatment flow control pond. A berm or barrier must be used in this case so the untreated water does not mix with the treated water. Both untreated stormwater storage requirements, and adequate post-treatment flow control must be achieved. The post-treatment flow control pond's revised dimensions must be entered into the WWHM and the WWHM must be run to confirm compliance with the flow control requirement.

S412 BMPs for Loading and Unloading Areas for Liquid or Solid Material

Description of Pollutant Sources: Operators typically conduct loading/unloading of liquid and solid materials at industrial and commercial facilities at shipping and receiving, outside storage, fueling areas, etc. Materials transferred can include products, raw materials, intermediate products, waste materials, fuels, scrap metals, etc. Leaks and spills of fuels, oils, powders, organics, heavy metals, salts, acids, alkalis, etc. during transfer may cause stormwater contamination. Spills from hydraulic line breaks are a common problem at loading docks.

Pollutant Control Approach: Cover and contain the loading/unloading area where necessary to prevent run-on of stormwater and runoff of contaminated stormwater.

Applicable Operational BMPs:

At All Loading/ Unloading Areas:

- A significant amount of debris can accumulate at outside, uncovered loading/unloading areas. Sweep these surfaces frequently to remove loose material that could contaminate stormwater. Sweep areas temporarily covered after removal of the containers, logs, or other material covering the ground.
- Place drip pans, or other appropriate temporary containment device, at locations where leaks or spills may occur such as hose connections, hose reels and filler nozzles. Always use drip pans when making and breaking connections (see [Figure 2.2.2](#)). Check loading/ unloading equipment such as valves, pumps, flanges, and connections regularly for leaks and repair as needed.

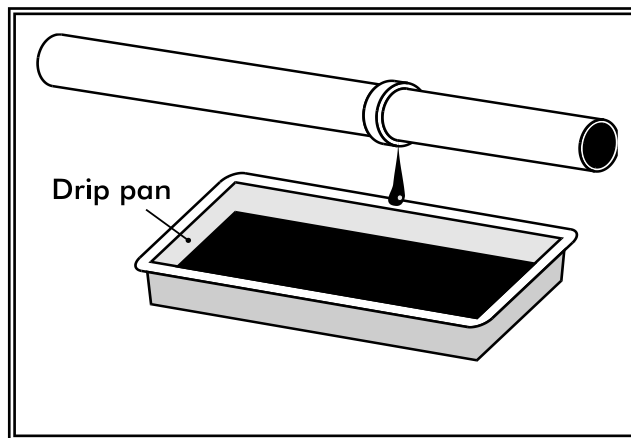


Figure 2.2.2 – Drip Pan

At Tanker Truck and Rail Transfer Areas to Above/Below-ground Storage Tanks:

- To minimize the risk of accidental spillage, prepare an "Operations Plan" that describes procedures for loading/unloading. Train the employees, especially fork lift operators, in its execution and post it or otherwise have it readily available to all employees.
- Report spills of reportable quantities to Ecology.
- Prepare and implement an Emergency Spill Cleanup Plan for the facility (See [S406 BMPs for Spills of Oil and Hazardous Substances](#)) which includes the following BMPs:
 - Ensure the cleanup of liquid/solid spills in the loading/unloading area immediately, if a significant spill occurs, and, upon completion of the loading/unloading activity, or, at the end of the working day.
 - Retain and maintain an appropriate oil spill cleanup kit on-site for rapid cleanup of material spills. (See [S406 BMPs for Spills of Oil and Hazardous Substances](#)).
 - Ensure that an employee trained in spill containment and cleanup is present during loading/unloading.

At Rail Transfer Areas to Above/below-ground Storage Tanks: Install a drip pan system as illustrated (see [Figure 2.2.3](#)) within the rails to collect spills/leaks from tank cars and hose connections, hose reels, and filler nozzles.

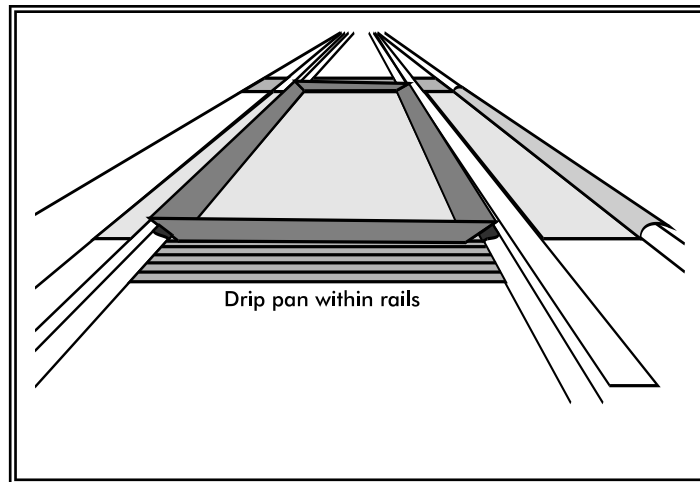


Figure 2.2.3 – Drip Pan Within Rails

Loading/Unloading from/to Marine Vessels: Facilities and procedures for the loading or unloading of petroleum products must comply with Coast Guard requirements specified in [Appendix IV-D R.5](#).

Transfer of Small Quantities from Tanks and Containers: Refer to BMPs [Storage of Liquids in Permanent Above-Ground Tanks](#), and [Storage of Liquid, Food Waste, or Dangerous Waste Containers](#), for requirements on the transfer of small quantities from tanks and containers, respectively.

Applicable Structural Source Control BMPs:

At All Loading/ Unloading Areas:

- Consistent with Uniform Fire Code requirements ([Appendix IV-D R.2](#)) and to the extent practicable, conduct unloading or loading of solids and liquids in a manufacturing building, under a roof, or lean-to, or other appropriate cover.
- Berm, dike, and/or slope the loading/unloading area to prevent run-on of stormwater and to prevent the runoff or loss of any spilled material from the area.
- Place curbs along the edge of the shoreline, or slope the edge such that the stormwater can flow to an internal storm sewer system that leads to an approved treatment BMP. Avoid draining directly to the surface water from loading areas.
- Pave and slope loading/unloading areas to prevent the pooling of water. Minimize the use of catch basins and drain lines within the interior of the paved area or place catch basins in designated “alleyways” that are not covered by material, containers, or equipment.
- Retain on-site the necessary materials for rapid cleanup of spills.

Recommended Structural Source Control BMP: For the transfer of pollutant liquids in areas that cannot contain a catastrophic spill, install an automatic shutoff system in case of unanticipated off-loading interruption (e.g. coupling break, hose rupture, overfill, etc.).

At Loading and Unloading Docks:

- Install/maintain overhangs, or door skirts that enclose the trailer end (see [Figures 2.2.4](#) and [2.2.5](#)) to prevent contact with rainwater.
- Design the loading/unloading area with berms, sloping, etc. to prevent the run-on of stormwater.

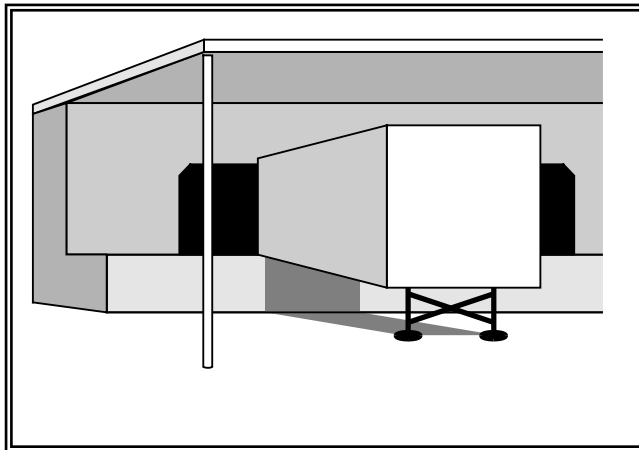


Figure 2.2.4 – Loading Dock with Door Skirt

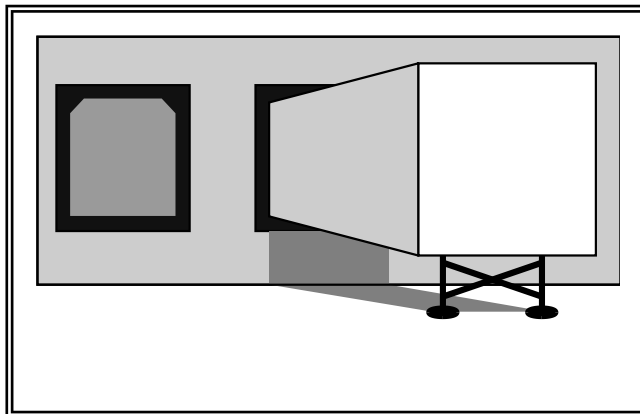


Figure 2.2.5 – Loading Dock with Overhang

At Tanker Truck Transfer Areas to Above/Below-Ground Storage Tanks:

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt, pave the area with Portland cement concrete.

- Slope, berm, or dike the transfer area to a dead-end sump, spill containment sump, a spill control oil/water separator, or other spill control device. The minimum spill retention time should be 15 minutes at the greater flow rate of the highest fuel dispenser nozzle through-put rate, or the peak flow rate of the 6-month, 24-hour storm event over the surface of the containment pad, whichever is greater. The capacity of the spill containment sump should be a minimum of 50 gallons with adequate additional volume provided for grit sedimentation.

S414 BMPs for Maintenance and Repair of Vehicles and Equipment

Description of Pollutant Sources: Pollutant sources include parts/vehicle cleaning, spills/leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries/liquids/parts, and vehicle parking.

Pollutant Control Approach: Control of leaks and spills of fluids using good housekeeping and cover and containment BMPs.

Applicable Operational BMPs:

- Inspect all incoming vehicles, parts, and equipment stored temporarily outside for leaks.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid containing parts or removal or transfer of liquids.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary containment system.
- Remove liquids from vehicles retired for scrap.
- Empty oil and fuel filters before disposal. Provide for proper disposal of waste oil and fuel.
- Do not pour/convey washwater, liquid waste, or other pollutants into storm drains or to surface water. Check with the local sanitary sewer authority for approval to convey water to a sanitary sewer.
- Do not connect maintenance and repair shop floor drains to storm drains or to surface water.
- To allow for snowmelt during the winter, install a drainage trench with a sump for particulate collection. Use the drainage trench for draining the snowmelt only and not for discharging any vehicular or shop pollutants.

Applicable Structural Source Control BMPs:

- Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated water.

- Operators may conduct maintenance of refrigeration engines in refrigerated trailers in the parking area. Exercise due caution to avoid the release of engine or refrigeration fluids to storm drains or surface water.
- Park large mobile equipment, such as log stackers, in a designated contained area.

Additional applicable BMPs:

- [S409 BMPs for Fueling at Dedicated Stations](#)
- [S410 BMPs for Illicit Connections to Storm Drains](#)
- [S412 BMPs for Loading and Unloading Areas for Liquid or Solid Material](#)
- [S426 BMPs for Spills of Oil and Hazardous Substances](#)
- [S427 BMPs Storage of Liquid, Food Waste, or Dangerous Waste Containers](#)
- [S428 BMPs for Storage of Liquids in Permanent Aboveground Tanks](#)
- [S429 BMPs for Storage or Transfer \(Outside\) of Solid Raw Materials, By-Products, or Finished Products](#)
- [S431 BMPs for Washing and Steam Cleaning Vehicle/Equipment/Building Structures](#)

Note this applicable treatment BMP for contaminated stormwater.

Applicable Treatment BMPs: Convey contaminated stormwater runoff from vehicle staging and maintenance areas to a sanitary sewer, if allowed by the local sewer authority, or to an API or CP oil and water separator followed by a basic treatment BMP (See Volume V), applicable filter, or other equivalent oil treatment system.

Recommended Additional Operational BMPs:

- Store damaged vehicles inside a building or other covered containment, until successfully removing all liquids.
- Clean parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and/or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene or similar chlorinated solvents. Choose cleaning agents that can be recycled.
- Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.
- Avoid hosing down work areas. Use dry methods for cleaning leaked fluids.

- Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils (see [Appendix IV-C](#)).
- Do not mix dissimilar or incompatible waste liquids stored for recycling.

S419 BMPs for Mobile Fueling of Vehicles and Heavy Equipment

Description of Pollutant Sources: Mobile fueling, also known as fleet fueling, wet fueling, or wet hosing, is the practice of filling fuel tanks of vehicles by tank trucks that are driven to the yards or sites where the vehicles to be fueled are located. Regulators categorize diesel fuel as a

Note that some local fire departments may have restrictions on mobile fueling practices.

Class II Combustible Liquid, whereas they categorize gasoline as a Flammable Liquid.

Historically organizations conducted mobile fueling for off-road vehicles operated for extended periods in remote areas. This includes construction sites, logging operations, and farms. Some organizations conduct mobile fueling of on-road vehicles commercially in the State of Washington.

Pollutant Control Approach: Operators typically need proper training of the fueling operators, and the use of spill/drip control and reliable fuel transfer equipment with backup shutoff valving.

Applicable Operational BMPs:

Organizations and individuals conducting mobile fueling operations must implement the bulleted BMPs below. The operating procedures for the driver/operator should be simple, clear, effective, and their implementation verified by the organization liable for environmental and third party damage.

- Ensure that the local fire department approves all mobile fueling operations. Comply with local and Washington State fire codes.
- In fueling locations that are in close proximity to sensitive aquifers, designated wetlands, wetland buffers, or other waters of the State, approval by local jurisdictions is necessary to ensure compliance with additional local requirements.
- Ensure compliance with all 49 CFR 178 requirements for DOT 406 cargo tanker. Documentation from a Department of Transportation (DOT) Registered Inspector provides proof of compliance.
- Ensure the presence and the constant observation/monitoring of the driver/operator at the fuel transfer location at all times during fuel transfer and ensure implementation of the following procedures at the fuel transfer locations:
 - Locate the point of fueling at least 25 feet from the nearest storm sewer or inside an impervious containment with a volumetric holding capacity equal to or greater than 110 percent of the fueling tank volume, or covering the storm sewer to ensure no inflow of spilled or leaked fuel. Covers are not required for storm sewers that convey the inflow to a spill control separator approved by the local jurisdiction and the fire department. Potential spill/leak conveyance surfaces must be impervious and in good repair.
 - Place a drip pan, or an absorbent pad under each fueling location prior to and during all dispensing operations. The pan (must be liquid tight) and the absorbent pad must have a capacity of at least 5 gallons. There is no need to report spills retained in the drip pan or the pad.

- Manage the handling and operation of fuel transfer hoses and nozzle, drip pan(s), and absorbent pads as needed to prevent spills/leaks of fuel from reaching the ground, storm sewer, and receiving waters.
- Avoid extending the fueling hoses across a traffic lane without fluorescent traffic cones, or equivalent devices, conspicuously placed to block all traffic from crossing the fuel hose.
- Remove the fill nozzle and cease filling the tank when the automatic shut-off valve engages. Do not lock automatic shutoff fueling nozzles in the open position.
- Do not “top off” the fuel receiving equipment.
- Provide the driver/operator of the fueling vehicle with:
 - Adequate flashlights or other mobile lighting to view fuel fill openings with poor accessibility. Consult with local fire department for additional lighting requirements.
 - Two-way communication with his/her home base.
- Train the driver/operator annually in spill prevention and cleanup measures and emergency procedures. Make all employees aware of the significant liability associated with fuel spills.
- The responsible manager shall properly sign and date the fueling operating procedures. . Distribute procedures to the operators, retain them in the organization files, and make them available in the event an authorized government agency requests a review.
- Immediately notify the local fire department (911) and the appropriate regional office of the Department of Ecology in the event of any spill entering surface or ground waters. Establish a “call down list” to ensure the rapid and proper notification of management and government officials should any significant amount of product be lost off-site. Keep the list in a protected but readily accessible location in the mobile fueling truck. The “call down list” should also pre-identify spill response contractors available in the area to ensure the rapid removal of significant product spillage into the environment.
- Maintain a minimum of the following spill clean-up materials in all fueling vehicles, that are readily available for use:
 - Non-water absorbents capable of absorbing at least 15 gallons of diesel fuel.
 - A storm drain plug or cover kit.
 - A non-water absorbent containment boom of a minimum 10 feet in length with a 12-gallon minimum absorbent capacity.
 - A non-spark generating shovel (a steel shovels could generate a spark and cause an explosion in the right environment around a spill).

- Two, five-gallon buckets with lids.
- Use automatic shutoff nozzles for dispensing the fuel. Replace automatic shut-off nozzles as recommended by the manufacturer.
- Maintain and replace equipment on fueling vehicles, particularly hoses and nozzles, at established intervals to prevent failures.

Applicable Structural Source Control BMPs: Include the following fuel transfer site components:

- Automatic fuel transfer shut-off nozzles.
- An adequate lighting system at the filling point.

S426 BMPs for Spills of Oil and Hazardous Substances

Description of Pollutant Sources: Federal law requires owners or operators of facilities engaged in drilling, producing, gathering, storing, processing, transferring, distributing, refining, or consuming oil and/or oil products to have a Spill Prevention and Emergency Cleanup Plan (SPECP). The SPECP is required if the above ground storage capacity of the facility, is 1,320 gallons or more of oil. Additionally, the SPECP is required if any single container with a capacity in excess of 660 gallons and which, due to their location, could reasonably be expected to discharge oil in harmful quantities, as defined in 40 CFR Part 110, into or upon the navigable waters of the United States or adjoining shorelines {40 CFR 112.1 (b)}. Onshore and offshore facilities, which, due to their location, could not reasonably be expected to discharge oil into or upon

the navigable waters of the United States or adjoining shorelines are exempt from these regulations {40 CFR 112.1(1)(i)}. State Law requires owners of businesses that produce dangerous wastes to have a SPECP. These businesses should refer to [Appendix IV-D R.6](#). The federal definition of oil is oil of any kind or any form, including, but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

Pollutant Control Approach: Maintain, update, and implement a Spill Prevention and Emergency Cleanup Plan.

Applicable Operational BMPs: The businesses and public agencies identified in [Appendix IV-A](#) required to prepare and implement a Spill Prevention and Emergency Cleanup Plan shall implement the following:

- Prepare a Spill Prevention and Emergency Cleanup Plan (SPECP), which includes:
 - A description of the facility including the owner's name and address.
 - The nature of the activity at the facility.
 - The general types of chemicals used or stored at the facility.
 - A site plan showing the location of storage areas for chemicals, the locations of storm drains, the areas draining to them, and the location and description of any devices to stop spills from leaving the site such as positive control valves.
 - Cleanup procedures.
 - Notification procedures used in the event of a spill, such as notifying key personnel. Agencies such as Ecology, local fire department, Washington State Patrol, and the local Sewer Authority, shall be notified.
 - The name of the designated person with overall spill cleanup and notification responsibility.
- Train key personnel in the implementation of the SPECP. Prepare a summary of the plan and post it at appropriate points in the building, identifying the spill cleanup coordinators, location of cleanup kits, and phone numbers of regulatory agencies to contact in the event of a spill.
- Update the SPECP regularly.
- Immediately notify Ecology, the local jurisdiction, and the local Sewer Authority if a spill may reach sanitary or storm sewers, ground water, or surface water, in accordance with federal and Ecology spill reporting requirements.

- Immediately clean up spills. Do not use emulsifiers for cleanup unless there is an appropriate disposal method for the resulting oily wastewater. Do not wash absorbent material down a floor drain or into a storm sewer.
- Locate emergency spill containment and cleanup kit(s) in high-potential spill areas. The contents of the kit shall be appropriate for the type and quantities of chemical liquids stored at the facility.

Recommended Additional Operational BMP: Spill kits should include appropriately lined drums, absorbent pads, and granular or powdered materials for neutralizing acids or alkaline liquids where applicable. In fueling areas: Package absorbent material in small bags for easy use and make available small drums for storage of absorbent and/or used absorbent. Deploy spill kits in a manner that allows rapid access and use by employees.

Attachment B- Spill Prevention, Controls, and Countermeasures Plan

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN



JORGENSEN FORGE EARLY ACTION AREA

Jorgensen Forge Corporation Property
Seattle, WA

Prepared for:



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Jorgensen Forge Early Action Area
Removal Action Work Plan

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1.0 INTRODUCTION

This Spill Prevention, Control, and Countermeasures Plan (SPCC) has been prepared for use during the construction of the Jorgensen Forge Early Action Area Cleanup. This Plan addresses potential spills related to construction activities. Potential releases due to stormwater runoff are addressed in the Stormwater Pollution Prevention Plan (SWPPP), Attachment A of Appendix C to the RAWP.

The purpose of this SPCC is to specify practices and procedures to minimize the potential for a spill or release of pollutants into the environment or the navigable waters of the United States (waters of the State) during the construction activities. This Plan addresses the following:

- Potential spill sources associated with construction activities;
- Procedures, methods, equipment, and other requirements to prevent spills from occurring and potentially discharging into waters of the State;
- Who to contact in the event of a spill; and
- Spill response procedures in the event a spill occurs.

A copy of this SPCC shall be kept at the construction site and construction personnel shall be familiar with its contents.

The remainder of this document is organized as follows:

- Section 2 provides facility identification information.
- Section 3 provides project background and work area description.
- Section 4 describes the existing stormwater drainage system.
- Section 5 identifies potential spill sources in the work area and describes spill prevention and containment measures that will be implemented to prevent spills/releases.
- Section 6 describes the procedures that should be implemented in the event of a spill in the work area.
- Section 7 describes training procedures that will be implemented so that on-site workers understand the potential spill sources and spill response procedures.
- Section 8 provides a list of references cited in this SPCC.

2.0 FACILITY IDENTIFICATION

Facility Name: Jorgensen Forge

Type of Facility: Industrial/manufacturing facility

Location of Facility: King County, Washington

King County Parcel: 000160-0023

Owner/Operator of Facility: The Earle M. Jorgensen Company and The Jorgensen Forge Corporation (Jorgensen Forge) 8531 East Marginal Way South Tukwila, WA 98108

Contractor/Operator of Temporary Facilities Covered in this Plan: Pacific Pile & Marine, L.P.

Spill Response/On-Site Coordinator: Greg Anderes, PPM Project Manager -M 206-450-7574. The spill response coordinator shall be responsible for implementation of this SPCC Plan.

3.0 PROJECT BACKGROUND AND WORK AREA DESCRIPTION

The Jorgenson Forge facility is located at 8531 E. Marginal Way S., Tukwila, WA 98108. Construction activities associated with the construction of the Jorgensen Forge Early Action Area Cleanup include intertidal, subtidal, and shoreline bank work adjacent to the Lower Duwamish Waterway (LDW).

The construction activities are being implemented as specified in the Contract Documents and the associated Construction Drawings. Construction activities will include removal and replacement of debris, soils and sediments from the shoreline bank and within the LDW. Jorgensen Forge has a SPCC Plan for the facility (Anchor QEA, June 2013) and is included by reference.

This specific SPCC Plan has been prepared for work performed directly on the LDW associated with the construction of the Jorgensen Forge Early Action Area Cleanup. Inherent to the work, equipment will be staged, operated, maintained, and re-fueled within the limits of the LDW.

4.0 EXISTING STORMWATER DRAINAGE SYSTEM

This section is not applicable for work performed directly within and/or adjacent to a navigable body of water within the United States as any spill that may occur as a result of

staging equipment, operation, and/or fuel transfer will directly impact said body of water. Identification of existing stormwater drainage is applicable for work performed on upland areas where spills have the potential for reaching a navigable body of water through overland drainage pathways. Stormwater drains will be located and protection applied to them as addressed in the SWPPP. Uplands activities that can impact current stormwater drainage systems are fueling, equipment storage, and material stockpiling. An equipment staging and fueling area will be constructed consisting of PVC lined crushed rock and/or soil berms. The berms will facilitate the containment and capture of any potential contaminants during refueling, equipment storage, or material stockpiling.

5.0 POTENTIAL SPILL SOURCES, SPILL PREVENTION, AND CONTAINMENT FEATURES

This section identifies potential spill sources associated with the planned construction and describes spill prevention and containment measures that will be implemented to prevent spills and releases to waters of the State. The project includes removal of existing utilities, excavation, dredging, and grading activities. This SPCC Plan was prepared specifically for work directly on the LDW including in-water work related to open-access dredging and the temporary upland construction stockpile areas and activities in support of this work. These activities do not present any unique spill hazards aside from the use of construction equipment to complete the work.

5.1 FUEL/CHEMICAL STORAGE

This section describes the fuels and other chemicals that will be used and temporarily stored in the upland project work area as part of the construction activities.

5.1.1 Potential Spill Source

A central on-site fueling area will be established within the stockpile area. The area will be lined with PVC sheets and covered in crushed rock and/or sand backfill to contain, capture, and cleanup potential spills. Due to the dredging equipment being located on barges Boyer Logistics will need to supply fueling for equipment on water. Section 5.1.3 details the procedures and BMPs needed for over-water fueling operations.

Other potential fuel/chemical spill sources may come from leaks of hydraulic fluids or coolant from the construction equipment and leaks or spills during operation or maintenance and repair of construction equipment. On-water source of leaks will be similar to shoreline equipment. Maintenance activities typically involve oil changes (vegetable oil used in majority of all equipment), hydraulic system drain down, coolant

flushing, greasing, and cleaning. Whenever possible all maintenance and repair activities will be performed in an upland area.

5.1.2 Spill Prevention and Containment Features

The following procedures will be implemented to prevent spills during equipment fueling and maintenance operations:

- The vendor tanker truck driver as well as an on-site construction worker will be present during equipment replenishment. Construction workers will be on-site during all fuel transfers.
- The amount of fuel to be added to equipment will be determined prior to starting fueling operations.
- Oil-and fuel-absorbent material will be readily available during all oil and fuel handling and transfer operations to contain any inadvertent spills that may occur.
- When refuelling, do not start the dispenser until the outlet nozzle is inserted in the tank.
- Fuel dispenser should only be held open by hand – do not lock or jam the trigger of the dispenser in the open position.
- Carefully monitor the filling rate to avoid overfilling.
- Have an oil absorbent cloth at hand to catch any spills.
- Spill buckets will be used during all fuel and oil transfers to catch any drips or leaks during fueling and maintenance operations.
- When transferring petroleum products, connections and transfer points will be carefully monitored for leaks.
- Equipment fuel tanks will never be topped off completely. Adequate headspace at the top of the tank will be left to allow for product expansion.
- Equipment receiving fuel and oil will be carefully checked for leaks or open drain valves prior to and during delivery.
- When possible, maintenance of equipment will be performed in a contained area, such as the stockpile area.
- When possible, equipment will be equipped with a biodegradable vegetable-based hydraulic oil in lieu of the standard petroleum based hydraulic oil.

A spill kit will be maintained on site (see Section 6.3.3) in shoreline areas as shown on the Hazardous Materials Management Plan, Attachment C of Appendix C to the RAWP, and on all major pieces of waterway equipment to handle potential fuel or oil leaks or other spills from construction equipment. The spill kits will minimally contain, oil absorbent booms, clothes, and dry granular absorbent (oil sorb or similar).

5.1.3 Over-water Fueling Spill Prevention and Containment Features

The following sequence is how equipment will

6.0 SPILL RESPONSE PROCEDURES

This section describes the procedures to be implemented in the event of a spill.

6.1 NOTIFICATION

Discovery of any spill at the Site shall be reported **immediately** in accordance with the owners' notification process. In addition to the federal regulations under 40 CFR 112.7, state regulations for spill reporting apply to this SPCC Plan (GPO 2012). According to Washington State law, oil spills that threaten to impact waters of the state by entering the soil, groundwater, or surface water must be reported immediately by the spiller (Ecology 2007). Telephone reports should be made to National Response Center, Washington Emergency Management Division. Any spill at the site that leaves the work area and reaches a nearby waterway shall be reported immediately in the accordance with the owners notification process to the appropriate agencies listed below:

AGENCIES FOR SPILL NOTIFICATION

Personnel/Agency	Phone Number
National Response Center (NRC)	1-800-424-8802
Washington Division of Emergency Management	1-800-258-5990 or 1-800-OILS-911
Washington Department of Ecology (NW Regional Office Spill Compliance Section)	1-425-649-7000
Environmental Protection Agency, Region 10	1-206-553-1263
City of Seattle Public Utilities	1-206-386-1800
City of Tukwila Fire Department	911 or 1-206-433-1800
City of Tukwila Public Works	1-206-433-1860

Emergency Response Contractor

Contractor Name	Phone Number
NRC	1-631-224-9141, EXT 0

Facility Emergency Contacts

Contact Name, Title	Phone Number
Miles Dyer, Director of Environmental Compliance	Office : (206) 965-1352 Mobile: (740) 777-7808
Jim Birch, Maintenance Superintendent	(206) 676-9217

6.2 SPILL REPORTING AND DOCUMENTATION

When reporting a spill, be prepared to give the following information:

- Name, address, and phone number of facility
- Date and time of discharge
- Type of material and estimate of total quantity discharged
- Source and cause of discharge
- Any damages or injuries caused by the discharge
- Actions being used to stop, remove, and mitigate the effects of the discharge
- Name of individuals and/or organizations who have also been contacted

In the event of a spill, personnel identified in Section 6.1 shall be notified. The Spill Response Coordinator shall be responsible for completing the Spill Notification Form. **It is not necessary to complete the Spill Notification Form before calling the agencies listed in Section 6.1.** All spills at the Site, regardless of volume, shall be documented. The designated Spill Response Coordinator (identified in Section 2.0) is responsible for any verbal and follow-up reporting with the regulatory agencies as deemed necessary based on discussions with Site personnel.

Agencies may request written follow-up notification following a verbally reported spill incident. The Spill Notification Form will be used for any required written notification to local, state, and federal government agencies.

For hazardous substance releases, Washington Department of Ecology (Ecology) regulations [Washington Administrative Code (WAC) 173-303-360(k)] require written notification within 15 days of the spill incident. The notification report must include:

- Name, address, and telephone number of the owner or operator;
- Name, address, and telephone number of the facility;
- Date, time, and type of incident (spill to water, spill to land, fire, etc.);
- Name and quantity of material(s) involved;
- The extent of injuries, if any;
- An assessment of actual or potential hazards to human health or the environment, where applicable;
- Estimated quantity and disposition of recovered material that resulted from the incident;
- Cause of incident; and
- Description of corrective action taken to prevent recurrence of the incident.

The report must be submitted to the following address:

Washington Department of Ecology – Northwest Regional Office
Hazardous Waste and Toxics Reduction Department
3190 -160th Ave. SE
Bellevue, WA 98008-5452

Ecology provides a method to report incidents using an internet “web form”. Refer to the copy of the Ecology web form provided in Attachment A for additional information.

6.3 SPILL RESPONSE AND CONTROL

When a spill occurs, the following basic actions shall be implemented, **if it is safe to do so**:

- Control the access area,
- Identify the hazards,
- Rescue personnel
- Stop or control further releases,
- Contain the spilled material,
- Implement clean-up measures,
- Recover the spilled substance, and
- Establish proper decontamination procedures.

Section 6.3.1 describes the spill response procedures for fuel/oil spills. Section 6.3.2 describes the spill response procedures for all other types of spills.

6.3.1 Fuel/Oil Spills

This section discusses the response and control of minor fuel/oil spills (less than 10 gallons) and major fuel/oil spills (greater than 10 gallons).

6.3.1.1 Minor Spills (less than 10 gallons)

Minor spills can occur from disconnection of hoses, hose or fitting leakage or

failure, pump leaks, and overfilling of tanks. These types of spills are typically less than 10 gallons and are limited to the surface area around the equipment fueling or maintenance area. These types of spills can typically be cleaned up by on site trained personnel.

If minor spills do occur, the on-site supervisor shall (1) direct cleanup of the spill by personnel using absorbent materials on hand at the facility; (2) report the spill as directed in Section 6.1; and (3) fill out the Spill Notification Form (Exhibit 1). Spill cleanup waste shall not be disposed of in the facility's trash containers. Any fuel/oil that has been released or any fuel/oil-contaminated media (such as absorbent materials) from a spill or overfill must be properly disposed of off-site in accordance with all applicable local, state, and federal regulations.

6.3.1.2 Major Spills (greater than 10 gallons)

In a worst-case scenario, the maximum amount of fuel/oil to be released would be the entire contents of a fuel tanker truck, estimated at approximately 20,000 gallons. During fueling equipment a spill on-site could possibly enter the LDW.

If a major release occurs, the following actions shall be immediately implemented, **if it is safe to do so**:

1. Stop the release:
 - Apply personal protective equipment.
 - Close valves.
 - Shut off pumps.
 - Seal holes with nonmetallic plugs or caps.
 - Remove fuel/oil from the tank to below the level of the hole where the oil is being released.
2. Identify and mitigate fire, explosion, and vapor hazards:
 - Eliminate possible sources of ignition.
 - Shut off engines, if necessary.
 - Shut off electrical power, if necessary.
3. Follow the notification procedure in Section 6.1 of this SPCC.
 - Immediately call the agencies, followed by emergency response contractor, and then facility contacts.
 - Due to NRC's presence in Seattle their response time can be within an hour of notification.
4. Contain the spill and stop it from spreading:
 - Soak up as much of the spilled material as possible with absorbent materials.
 - Identify the drainage route of the spill and locate a capture site where the spilled material may pond or be diverted and/or

contained. Blocking drainage using absorbent materials is preferred over ditching when practical.

- Place absorbent materials and booms at the entrance to any nearby drains (if they are not already covered) or bodies of water.
 - Put up "CAUTION" tape or other temporary barriers to prevent unauthorized personnel from entering the spill area, if necessary.
5. Assist spill response personnel, if requested to do so:
- Continue to monitor and mitigate fire and safety hazards.
 - Clean affected surfaces of residual spillage.
 - Dispose of all disposable contaminated materials properly. Do not place these materials in standard waste containers. Any fuel/oil that has been released or any fuel/oil-contaminated media (such as absorbent materials) from a spill or overfill must be properly disposed of in accordance with all applicable local, state, and federal regulations.
6. Document the spill: Fill out the Spill Notification Form.

6.3.2 Other Spills

Whereas most oil products tend to behave in a consistent manner and require similar spill response procedures, spill response procedures for hazardous substances vary according to the nature of the substance. For this reason, spill response personnel should use extreme caution until the hazardous substance is identified. It may be necessary to delay response actions until safe levels of exposure are determined. Spill response procedures should be based on the chemical behavior and potential adverse health effects of the hazardous substances.

Copies of Material Safety Data Sheets (MSDS) for all hazardous materials brought on site will be either attached to or alongside this SPCC so that they are readily available in the event of a spill.

6.3.3 Spill Response Equipment

A spill kit containing the following items shall be maintained at the facility:

- 20-gallon plastic container/recovery drum,
- Sorbent booms and socks,
- Sorbent pads,
- Sorbent material,
- Disposal bags/ties,
- Barrier tape,
- Plastic shovel,
- Broom, and

- Rubber boots, gloves, safety glasses, and other personal protection equipment for hazardous materials.

A weather proof sign indentifying the location of the spill kits, contractor's onsite contact information, and all required notifications will be placed outside of the field office, the stockpile area, entrance to the work zone, and the north and south ends of the upland work zone.

7.0 TRAINING

All personnel on site shall be familiar with the spill prevention and response procedures described in this SPCC. Prior to starting any work on site, personnel shall be briefed on the contents of this SPCC and shall be made aware of where the SPCC is maintained on site.

Attachment A- Ecology Web Form



<http://www.ecy.wa.gov>

[ogy home](#) > [Contact Us](#) > [How to report a problem](#) > [Make a report](#) > Northwest Regional Office

Environmental Incident Report Form

Northwest Regional Office

(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

Report all oil and hazardous materials spills:

You must call the following **TWO (2)** 24-hour numbers:

- 1) **Washington Emergency Management Division:**
(including Emergency Release Notification)
1-800-258-5990 -OR- 1-800-OILS-911

AND

- 2) **National Response Center: 1-800-424-8802**

> Ecology Northwest Regional Office: **1-425-649-7000**
> [More about reporting spills...](#)

Other environmental incidents may be reported using the electronic form below. Please fill-in as much of the following information as you can. Please check it for accuracy and then click the "Submit" button at the bottom of this form. You may be contacted for additional clarification.

Information About You

Your First Name	<input type="text"/>
Your Last Name	<input type="text"/>
Your Business Name (if any)	<input type="text"/>
Your Street Address	<input type="text"/>
Your Apartment Number (if any)	<input type="text"/>
Your City	<input type="text"/>
Your State	<input type="text" value="WA"/>
Your ZIP Code	<input type="text"/>
Your Home phone	<input type="text"/>
Your Work phone	<input type="text"/>

Your Email

Confidential? If you indicate "Yes", your name, etc. will be kept confidential.

Description of Incident - What Happened

Date of Incident (mm/dd/yyyy)

Medium

Material

Other Material

Quantity

Unit of Measure

Source

Cause

Activity

Impact

Vessel Name

Vessel Type

Additional
Description of
Incident

Location of Incident - Where did it happen

County

Nearest City

Street Address

Waterway

Waterway type

Directions

Potentially Responsible Party Information - Who is responsibleFirst Name Last Name Business (if any) Street Address Apartment or Suite
(if any) City State ZIP Code Phone Phone type: Other Information
about Potentially
Responsible Party

*****To save your own record of the information entered above, please print this page before you hit the submit button below. *****

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Attachment C- Hazardous Materials Management Plan

HAZARDOUS MATERIALS MANAGEMENT PLAN



JORGENSEN FORGE EARLY ACTION AREA

Jorgensen Forge Corporation
Seattle, WA

Prepared for:



720 Olive Way, Suite 1900
Seattle, WA 98101

Prepared by:



700 S. Riverside Dr.
Seattle, WA 98108

Jorgensen Forge Early Action Area
Removal Action Work Plan

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1.0 Purpose & Objective

This Hazardous Materials Management Plan (HMMP) addresses management of Hazardous Materials during in-water construction activities associated with the Project work located in the Jorgensen Forge Early Action Area and materials brought to the site to be used incidentally to maintain equipment and support the primary work.

2.0 Background and Project Description

Jorgenson Forge is located at 8531 E. Marginal Way S., Tukwila, WA 98108, Construction activities associated with the Project include intertidal, sub tidal, and shoreline bank work adjacent to the Lower Duwamish Waterway (LDW).

The construction activities are being implemented as specified in the Contract Documents and the associated design drawings Anchor QEA Addendum#2 12-23-13.

Construction activities will include removal and replacement of soil and sediment from the shoreline bank and within the Duwamish Waterway. Jorgensen Forge Corporation has a Storm Water Pollution Prevention Plan – Industrial Storm Water General Permit (NO. WAR – 003231) for the onshore facility (Anchor QEA, February 2013).

This HMMP has been prepared for work performed directly on the Duwamish Waterway associated with the construction of the Jorgensen Forge Early Action Area Cleanup inherent to the work and equipment will be staged, operated, maintained, and re-fueled within the limits of the Duwamish Waterway.

3.0 Site Description

The Site occupies approximately 20 acres between Slip No. 4 and Slip No. 6 on the east bank of the Lower Duwamish Waterway (LDW) at approximately river mile marker 3.6. The Site is situated approximately 4.7 miles south and upriver of Elliot Bay. The Site is bordered on the west by the LDW, on the north by Boeing Company's (Boeing) Plant 2 facility, on the east by the East Marginal Way South arterial and the Boeing Field/King County International Airport, and on the south by a vacant lot owned by Boeing (Figure 1).

Construction activities will be limited to the areas along the bank. Access will be provided from East Marginal Way through a security controlled gate then via a shared paved road way located near the north boundary of the site. A bermed staging and stockpile area will be established above the waterway bank.

The irregular shore line along the Facility includes abandoned culverts, derelict piles, debris and impacted soil which will be removed as part of this Project.

4.0 Proposed Construction Activities

The Project activities are being implemented as specified in the Contract Bid Documents (Anchor QEA, February 2014) and the associated design drawings. Project activities will include; removal of piling, removal and disposal of timbers concrete, metal, asphalt, logs and debris below the top of the bank, plugging and grouting unused outfalls after removing extent of pipe, plugging and grouting the in-service outfall after the new outfall is active, and removal and replacement of soil and sediment from the shoreline and within the Duwamish Waterway.

5.0 Purpose and Basis

The purpose of this HMMP is to describe the proposed means and methods to store use and manage hazardous materials in a way to protect both workers and the environment. The plan has been prepared in accordance with Contract Bid Specification Section 015000, Part 1.03.C.9. Although a separate document, it is intended to be part of the overall plans for the Project.

6.0 Organization

This HMMP was prepared based on the requirements set forth in the specifications. Supporting documentation and standard forms are provided in the Health and Safety Plan included in Appendix A-2 of the RAWP.

7.0 Hazardous Materials Management

All materials will be stored in accordance with OSHA and local regulations. Flammable materials will be stored in a certified metal cabinet locked and access limited only to trained certified employees.

Paints, solvents, and other materials shall be handled with care to prevent entry of contaminants into storm drains, surface waters, or soils. Wastes related to these materials shall be collected and properly disposed of by PPM.

Fuel hoses, lubrication equipment, hydraulically operated equipment, oil drums, and other equipment and facilities shall be inspected regularly for drips, leaks, or signs of damage, and shall be maintained and stored properly to prevent spills. These facilities will be located in the staging areas as shown in Figure 2. Safe separation will be maintained between hazardous materials to prevent unwanted ignition. The materials will be maintained behind locked gates to discourage vandalism.

All land-based oil and products' storage tanks shall be diked, contained, and/or located to prevent spills from escaping into the water. Diking and containment area surfaces shall

be lined with impervious material to prevent oil from seeping through the ground and dikes.

PPM will designate a service area for such activities as refueling or vehicle maintenance of Contractor vehicles when performed at the Jorgensen Forge EAA.

PPM will store materials, equipment, and accommodate employee parking in the staging/stockpiling area. Employee parking will be confined to the Contractor's work and storage area. No on-street equipment or other employee parking is allowed.

PPM will maintain spill kits near all areas of work (locations are shown in Figure 1). All nearby catch basins shall be protected from spills entering the storm drain. A readily accessible and prominently visible weatherproof sign will be located with the spill cleanup kit showing:

- The Contractor's on-site person with contact information,
- Required notifications should a spill occur as indicated in this Section

One kit will be located near the storage area, one kit will be maintained near the working equipment and one kit will be in reserve in the contractor's storage container. ! spill kit containing the following items shall be maintained at the facility:

- 20-gallon plastic container/recovery drum,
- Sorbent booms and socks,
- Sorbent pads,
- Sorbent material,
- Disposal bags/ties,
- Barrier tape,
- Plastic shovel,
- Broom, and
- Rubber boots, gloves, safety glasses, and other personal protection equipment for hazardous materials.

PPM will place a prominent weather proof sign on each kit plus a weather resistant copy of the SPCC plan including the:

- The Contractor's on-site person with contact information, · Required notifications should a spill.
- The SPCC Plan addressing:
 - Controls and Supplies for preventing environmental spill
 - Controls and Supplies for containing a spill should such occur
 - Supplies and procedure for cleanup should a spill occur

PPM will provide regular informational training for all employed in the work, and identify any additional and necessary precautions when near or over or beneath surface

waters, sewer and storm drain, natural drainage system, wetland, reservoirs, and similar areas and structures

Any visible floating oils on site shall be immediately contained with booms, dikes, or other appropriate means and removed from the water prior to prevent any discharge into State waters. All visible oils on land shall be immediately contained by PPM using dikes, straw bales or other appropriate means and removed using sand, ground clay, sawdust or other absorbent material, which shall be properly disposed of. Waste materials shall be temporarily stored in drums or other leak-proof containers after cleanup and during transport to disposal. Waste materials shall be disposed off-site in accordance with applicable local, state, and federal regulations and the Waste Management Plan.

In the event of any oil or product discharges into public waters, or onto land with a potential for entry into public waters, the Contractor shall immediately notify all parties described in the Spill Prevention and Counter Measures Plan included as Attachment G-2 to the Temporary Facilities and Controls and Environmental Protection Control Plan.

Emergency Contacts

Local Emergency Contacts – Notify Immediately as Needed

Local Emergency Contacts	Telephone No.
Fire:	911
Police:	911
Hospital/Ambulance:	911
USEPA National Response Center	1.800.424.8802
Poison Control Center	1.800.222.1222
Work Care	1.800.455.6155

PPM Emergency Project Management Contacts – Notify Immediately

Project Emergency Contacts	Telephone No.
Greg Anderes, Project Manager	206-450-7574
Marty Locke, Project Superintendent	206-963-8927
Joseph Adami, Company Safety Officer	907-351-5570

Hazard Communication Program

The PPM Hazard Communications Program, in its entirety, is located in a separate labeled notebook in the PPM Project Trailer. The notebook is available for review by employees at any time during normal work shift. PPM will be responsible for maintaining a copy of their Hazardous Communication Program and MSDSs on site.

Subcontractors

Subcontractors will be responsible for keeping an individual copy of their respective programs.

Material Safety Data Sheets (MSDSs)

MSDSs will be located in a separate labeled notebook in the PPM Project Trailer. MSDSs will be available to all employees for review during the work shift. Copies of all MSDSs for materials on site will be provided to the PPM HSO prior to material delivery on the site, and made available for review by the client or client representative.

Container Labeling

All containers received on site will be inspected to ensure the following:

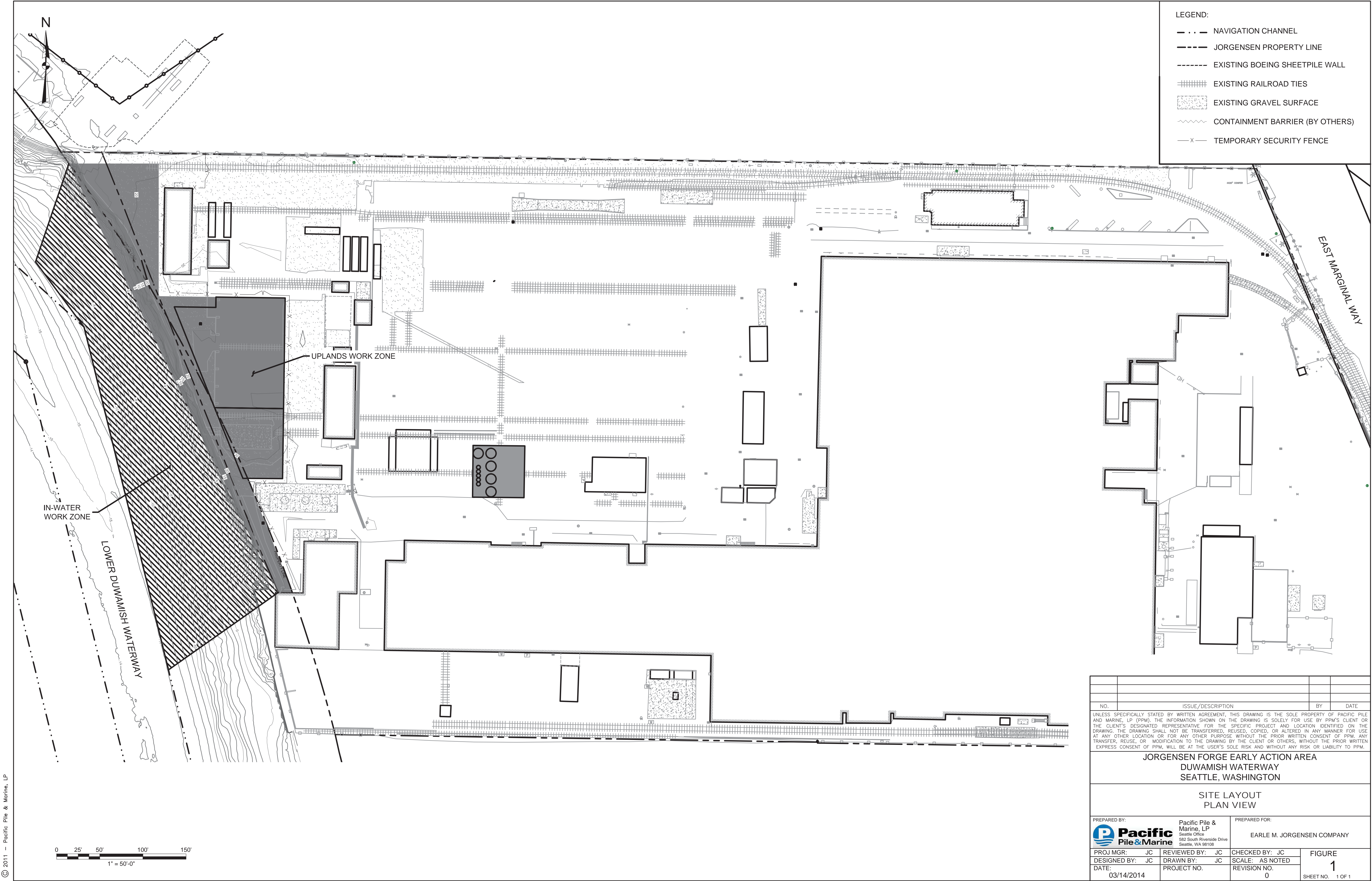
- All containers clearly labeled;
- Appropriate hazard warning; and
- Name and address of the manufacturer

Employee Training and Information

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on an overview of the requirements contained in the Hazardous Communication Program. This training shall include at a minimum the following:

- Hazardous chemicals brought to the site for the project;
- The location and availability of the written Haz Comm Program;
- Physical and health effects of the hazardous chemicals;
- Methods of preventing or eliminating exposure;
- Emergency procedures to follow if exposed;
- How to read labels and review MSDSs to obtain information; and
- Location of MSDS file and location of hazardous chemical list

Figure 1- Site Map




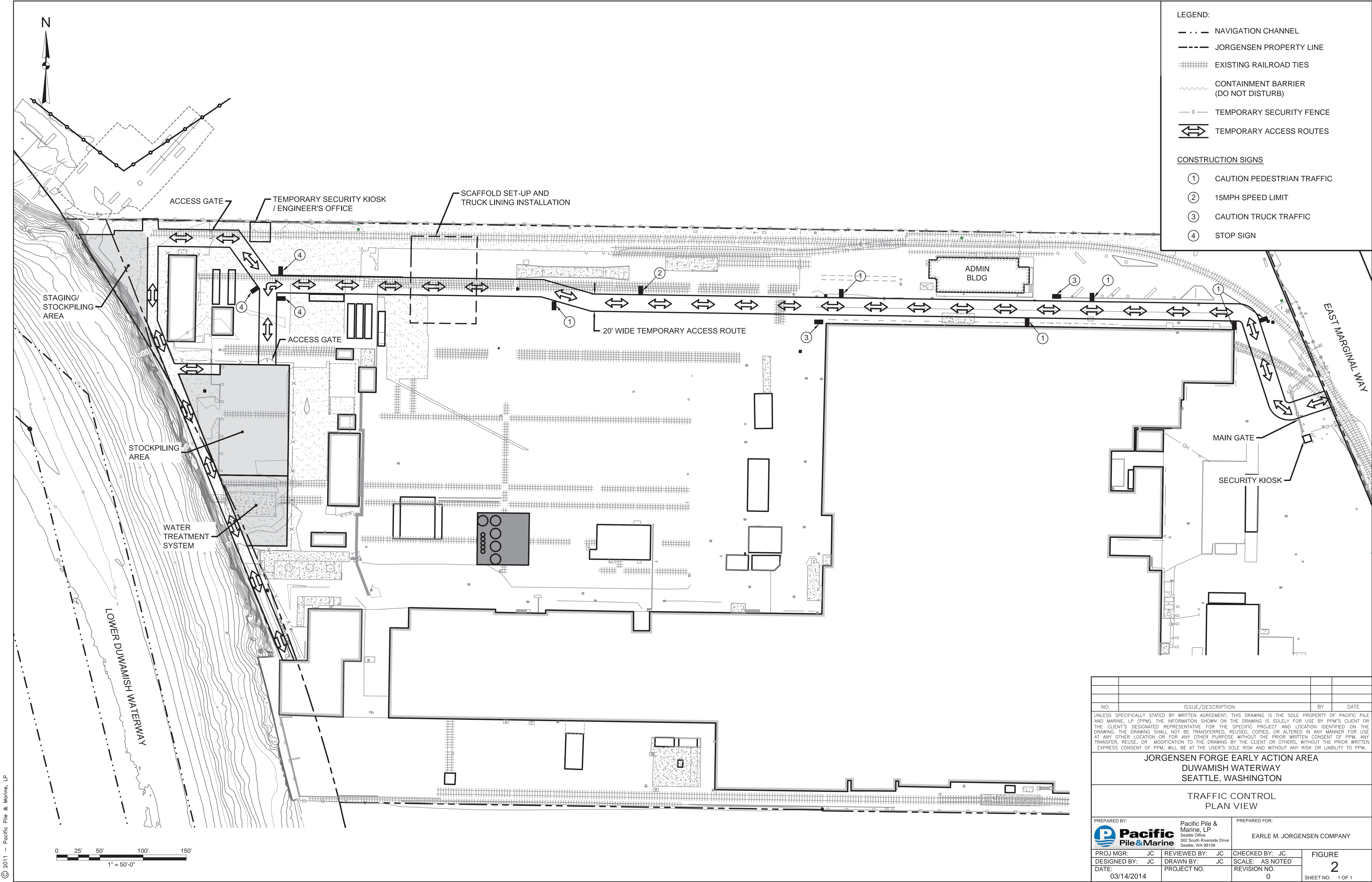
NO.		ISSUE/DESCRIPTION	BY DATE
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JORGENSEN FORGE EARLY ACTION AREA DUWAMISH WATERWAY SEATTLE, WASHINGTON			
SITE LAYOUT PLAN VIEW			
PREPARED BY:  Pacific Pile & Marine Seattle Office 982 South Riverside Drive Seattle, WA 98108		PREPARED FOR: EARLE M. JORGENSEN COMPANY	
PROJ MGR: JC	REVIEWED BY: JC	CHECKED BY: JC	FIGURE 1 SHEET NO. 1 OF 1
DESIGNED BY: JC	DRAWN BY: JC	SCALE: AS NOTED	
DATE: 03/14/2014	PROJECT NO.	REVISION NO. 0	

Figure 2- Site Layout



LEGEND:

- NAVIGATION CHANNEL
- JORGENSEN PROPERTY LINE
- ||||| EXISTING RAILROAD TIES
- ~~~~~ CONTAINMENT BARRIER (DO NOT DISTURB)
- x — TEMPORARY SECURITY FENCE
- ⇄ TEMPORARY ACCESS ROUTES

CONSTRUCTION SIGNS

- ① CAUTION PEDESTRIAN TRAFFIC
- ② 15MPH SPEED LIMIT
- ③ CAUTION TRUCK TRAFFIC
- ④ STOP SIGN

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JORGENSEN FORGE EARLY ACTION AREA DUWAMISH WATERWAY SEATTLE, WASHINGTON				
TRAFFIC CONTROL PLAN VIEW				
PREPARED BY:		Pacific Pile & Marine, LP Seattle Office 582 South Riverside Drive Seattle, WA 98108		PREPARED FOR: EARLE M. JORGENSEN COMPANY
PROJ MGR: JC	REVIEWED BY: JC	CHECKED BY: JC	FIGURE 2 SHEET NO. 1 OF 1	
DESIGNED BY: JC	DRAWN BY: JC	SCALE: AS NOTED		
DATE: 03/14/2014	PROJECT NO. 0	REVISION NO. 0		